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ABSTRACT

This document, one of five volumes comprising a training program in instructional materials development designed for educational research and development personnel, provides practice in all the major tasks involved in the program. These final exercises provide an opportunity to put together component activities and practice them in combination just as in a real situation. Two types of materials are provided: (a) materials to work on directly and (b) materials representing completed prior analyses. This volume is divided into nine final tasks: (a) making revisions in an instructional program; (b) developing an instructional program; (c) formulating an instructional strategy; (d) developing tests; (e) planning simulation; (f) stating objectives, (g) analyzing criterion behavior, and (h) developing an instructional program through the complete cycle. (PD)

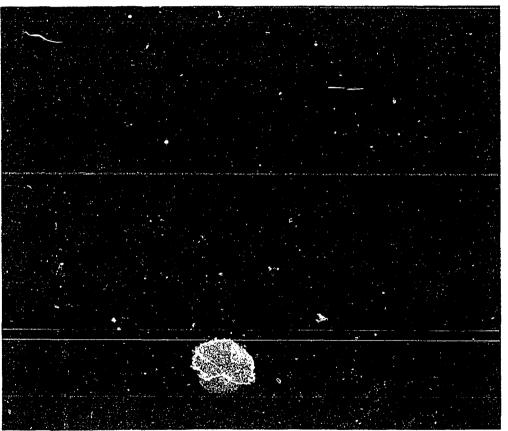




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A Technology For Developing Instructional Materials

5 FINAL EXERCISES



AUTHOR:

George L. Gropper

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U S DEPARTMENT OF HEALTH. EDUCATION & WELFARE NATIONAL INSTITUTE OF EDUCATION

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A Technology For Developing Instructional Materials

5 FINAL EXENCISES

Volume Titles:

- 1. USER'S MANUAL
- 2. ORIENTATION
- 3. HANDBOOK
- 4. WORKBOOK
- > 5. FINAL EXERCISES

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VOLUMES IN THIS SERIES

- 1. USER'S MANUAL
- 2. ORIENTATION
- 3. HANDBOOK (eleven sub-volumes)
- 4. WORKBOOK
- 5. FINAL EXERCISES



FOREWORD

This FINAL EXERCISES volume is but one of five major volumes which comprise a training program. In instructional materials development designed for educational RED personnel. It was prepared to provide personnel taking the program practice in all the major tasks involved in the instructional materials development process.

The USER'S MANUAL describes the role each of the five major volumes is designed to play. It also prescribes the sequence in which each of the separate volumes is to be used. Personnel taking this program are, therefore, urged to read the instructions contained in the USER'S MANUAL before attempting to use this or any of the other separate volumes.

ACKNOWLEDGMENTS

The materials in this volume were prepared under a contract from the U.S. Office of Education, Contract No. OEC-0-70-4776(520). Dr. George L. Gropper, Director of Instructional Media Studies, served as principal investigator.

U.S.O.E. sponsorship does not in any way imply official endorsement of the views expressed in this volume.

The author is indebted to Miss Kathleen Gubala for her tireless preparation of the complex manuscript required by this FINAL EXERCISES volume.

George L. Gropper March 1973



GENERAL INSTRUCTIONS

Each of the ten major TASKS in the materials development process (TASKS A-J) involves several STEPS and Sub-STEPS. WORKBOOK exercises gave you the opportunity to practice executing separate Sub-STEPS and, in some instances, just portions of a Sub-STEP. In the FINAL EXERCISES which appear in this volume you have the opportunity to put together these component activities and to practice them in combination, just as you would in a real, job-like situation.

Each FINAL EXERCISE provides you with two types of materials: (1) the materials you are to work on directly; and (2) the materials representing completed <u>prior</u> analyses. For example, when you are required to formulate an instructional strategy (TASK G), you will be given the results of all the necessary prior analysis on which you are to base your formulations (i.e. task analyses, statements of objectives, tests, etc.). Much of this prior analysis is summarized and condensed on specially prepared forms.

The training you are receiving is sequenced in a backward order, i.e. you are starting with TASK J rather than with TASK A. Therefore, when you are given the results of <u>prior</u> TASKS in the development process, you will not have learned how to perform prior tasks and cannot be expected to make full use of all the information provided.

In earlier exercises brief orienting instructions are provided to call your attention to specific information available on the completed FORMS. You will need merely to <u>familiarize</u> yourself with the information on the FORMS to which the orienting instructions call attention. The rest of the information on the FORMS, particularly when shorthand symbols are used, may be ignored until such time as you have had practice in using it.

The FORMS are presented in their entirety often before you are able to use all the information on them. They are intended to serve as models which, when you are subsequently given practice relevant to each prior task using the forms, you will be better prepared to follow yourself.



SCHEDULE

AFTER COMPLETING ALL WORKBOOK EXERCISES IN SECTION:	DO FINAL EXERCISE #:	TASK TITLE:
J	1	MAKING REVISIONS IN AN INSTRUCTIONAL PROGRAM
I	2	DEVELOPING AN INSTRUCTIONAL PROGRAM
G	3	FORMULATING AN SISTRUCTIONAL STRATEGY
F	4	DEVELOPING TESTS
E	5	PLANNING SIMULATION
D	6	STATING OBJECTIVES
В	7ε8	ANALYZING CRITERION BEHAVIOR

After completing FINAL EXERCISES 1-8	9	THE COMPLETE CYCLE IN DEVELOPING AN INSTRUCTIONAL PROGRAM TASKS B-J
	· ·	



FINAL EXERCISE #1 MAKING REVISIONS IN AN INSTRUCTIONAL PROGRAM

NOT TO BE PERFORMED UNTIL ALL WORKBOOK EXERCISES ASSOCIATED WITH HANDBOOK SECTION "J" HAVE BEEN COMPLETED.



FINAL EXERCISE #1: Making Revisions in an Instructional Program

Before doing this exercise, you should have completed the following tasks:

(1) Read HANDBOOK Section "J": EVALUATE INSTRUCTIONAL MATERIALS:

and

(2) Do the WORKBOOK exerc ses associated with Section "J."

Your assignment in this exercise is to perform TASK J: "making revisions in an instructional program".

As a basis for performing this task, starting on page 1.3 you will be given completed results for prior TASKS in the materials development process which you are to review briefly.

Following your review of these results, you are to revise the instructional program which appears in the section beginning on page 1.13.



The development of the program which you are expected to revise was based on the results of prior TASKS in the development process. This section contains those results.

Before proceeding to the "revisions" assignment on page 1.13, briefly review the completed FORMS which contain the results of the various PRIOR DEVELOPMENT TASKS.

RESULTS OF PRIOR DEVELOPMENT TASKS WHICH ARE MADE AVAILABLE TO YOU

TASK LABEL	TASK TITLE	FORM NO.
В	Task analysis, learning analysis, competency analysis, and mode analysis	A.5(4)
D	Statement of objectives	D.2(1) and D.2(2)
E	Simulation plans	E.1(1)
F	Test development	F.2(1)
G	Instructional strategies	G.1(2)

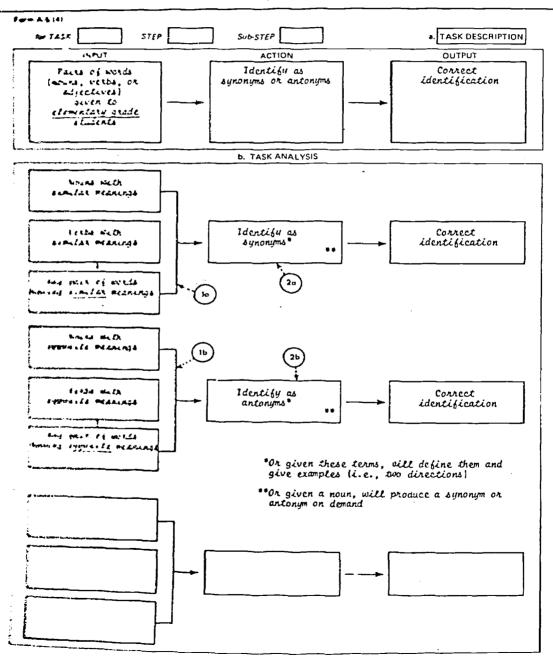
Review the results of these prior TASKS beginning on the next page.

THESE RESULTS REFLECT ANALYSES OF WHAT IS INVOLVED IN TEACHING (PRIMARY GRADE) STUDENTS TO BE ABLE TO IDENTIFY, DEFINE, AND ILLUSTRATE: "SYNONYMS" AND "ANTONYMS."



NOTE: Section "b" of FORM A.5(4) identifies:

- 1 -- the classes of word types (la) and (lb) which have to be discriminated one from the other.
 - -- the variety of word types within class (la) and within class (lb) which have to be generalized (seen as being similar).
- the ACTION (response) (2a) or (2b) to be associated with each class of word type.







NOTE: 1 The endorsement of the TRANSFER boxes in the column marked "competency analysis" signifies that on a test the learner will be required to respond to new examples (those not encountered during instruction).

There is an endorsement of "hi" anticipated generalization difficulty in section "c" of the FORM — due to the large number of new words in the language the learner may be faced with.

_									
ENCY IS	c. LEARNING ANALYS	is				d. MC	DE ANAL	_YSIS	•
	level of difficulty in acqui	ring —	₹						
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	due to ▽	hi i	med	lo		i	7,		T
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NOTE: --There are three criterion objectives (one on each row) for the program which has already been prepared and which you will revise.

- -- Each statement identifies (in each column):
 - ...what will be presented to the student (GIVEN)
 - *what he will do (STUDENT WILL)
 - .. the output and its standards (RESULTING IN)

Form D.2(1) LESSON SPECIFICATION OF OBJECTIVES GIVEN STUDENT WILL RESULTING IN Criterion Inputs Criterion Actions Criterion Outputs mode visual/verbal/etc. emode: recognition, editing, production • mode: visual/verbal/etc. number of examples from class alternatives: new and/or old examples • limits, standards new and/or old examples mode: perceptual/motor/vocal/sub-vocal equantitative: amount /degree/time limits typical/atypical conditions • gualitative availability of performance aids CRITERION Pairs of words (nouns. Identify them as Correct identification verbs, or adjectives) synonyms or antonims 100% Both new and old 1. examples of synonyms or antonims CRITERION Correct definition -Terms "synonym" and will define the terms in "antonum" his own words and give and examples two (new) examples of 100% each 2. CRITERION -Single words (high Produce a synonym or an Correct synonym frequency words) antonum or antonym 100% Request for either a 3. synonym or antonym



NOTE: --The objectives on the opposite page are used by the <u>developer</u>.

The "objectives" on this page are given to the student when he goes through the program which is developed.

- .-- The first two columns (GIVEN and YOU WILL) reproduce the information used by the developer.
- -- The third column identifies for the student what he has to <u>learn</u> in order to be able to perform what is identified in the first two columns.

Form D.2(2) STATEMENT OF OBJECTIVES LESSON FOR STUDENTS GIVEN YOU WILL YOU MUST LEARN TO Inputs Actions distinguish between examples from # input classes objects people events select, edit, or produce words symbols etc. on the basis of # properties type of action • their properties e.g., point to, label, write, see similarity classify, etc. among examples examples: within each of the input classes number RESULTING IN new or old on the basis of properties availability of performance aids associate one of objects, events, words, symbols, actions with each one of the input classes typical/atypical conditions exhibit alternative their properties (quantity/quality) problem format actions e.g., single input vs. multiple e exhibit the series of standards of acceptability associations in the chain Given pairs of nouns You will identify the -You must cearn to tell which are either pairs as being synonyms the difference between synonyms or antonyms or antonyms two types of relationand with the aid of a ships between words special dictionary to -These rclationships are ١. look up words you may based on similarity or not know dissimilarity of meaning Given the terms You will be expected to -You will also have to remember which tupe of relationship is called "synonym" and "antonym" define them in your own words and to provide two (correct) examples a synonym and which is of each (your own) called an antonym 2. -Given a noun -You will be expected to produce either a synonym for it or an antonym -You will be expected 3. to get all test items correct



NOTE: --The decision whether or not to have students practice with a simulated version of the criterion behavior is based on two sets of criteria, one instructional and the other logistical.

The 'N" entries in the top portion of the FORM signify that on all criteria there is a NEGLIGIBLE need for simulation.

--Accordingly, there are no simulation plans entered in the bottom section of the FORM.

SIMULATION LESSON **OBJECTIVE** a, assessing simulation needs due to LOGISTICAL CONSIDERATIONS INSTRUCTIONAL CONSIDERATIONS downtime sampling standardization manipulation cost Ν b. planning simulation when needed No simulation needed - all paper and pencil INPUT types PROPERTIES: physical, psychological SIMULATION PLANS: visual, audio, etc. people man made objects natural objects events words symbols other **ACTION types** perceptual motor vocal sub-vocal **OUTPUT** types people man made objects natural objects events words symbols other



Form E.1(1)

NOTE: -- The TEST to be given to students is outlined on this FORM.

- --Three types of test items la , lb , & lc are identified and a total of twenty items listed in row No. 1.
- -- The remaining two rows indicate what the student is expected to do.

Form F.2(1)

LESSON	OBJECTIVE		FORM FOR TEST DEVELOPMENT
"GIVEN"	INFORMAT la	TION YOU PLAN TO GIVE TO STU 1b	IDENT lc
- Instructions - Ouestion or Problem - INPUTS (new/old) - AIDS (when applicable) - ANSWER OPTIONS (when applicable)	For each pair, check whether it is a synonym, an antonym, or neither: [1] modern/ancient [2] radio/television [3] repaired/fixed [4] difference/likeness [5] written/spoken [6] less/fewer than	In your own words define the terms: (7) "synonym" and (8) "antonym" Give two examples of each (of your own): (9), (10) synonyms and (11), (12) antonyms	Give me a synonym and an antonym for the following words: (13) quick (14) often (15) departed (16) begin (17) riches (18) warmth (19) build (20) handsome

ŀ		WHAT	11/10/21	UDENT IS EXPECTED T	000	
ACTIONS (new/ald) mode	17	hecks "synonym," antonym," or neither" for each air	26.	Produces a definition and two examples for each term	20.	Produces a synonym and an antonym

"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT						
- OUTPUTanswersDroductType of ScoringStandards for Scoring	3a. 100% correct	36.	Idea of "similar meaning" and "opposite meaning" present in definition; two examples for each term		Similar and opposite meanings acceptable without attention to fine shadings in meaning		



NOTE: --Pages 1.10 and 1.11 contain the FORM used in planning an instructional strategy for the performance described and analyzed on the preceding pages.

- --Row IA on this page: The circled endorsements summarize the analyses entered on pages 1.4 and 1.5.
- --Row IIA: The endorsements in row IA serve as a basis for entering the matrix on row IIA and thereby identifying potential strategies.
- --Row III: This now provides a reminder of other procedures which need to be performed.

orin G.1(2)	•		
LESSON		CRITERION BEHAVIOR	

IA. Characterize Criterion Practice Requirements

<u> </u>	PERFORMANCE	LEARNING PROBLEMS	PROBLEM SOURCE	MODE
	simulation aids available two directions transler delayed basis	INPUTS discriminations generalizations INPUTS & ACTIONS 5 associations 6 chains	INPUTS similarity Idis 1 No. of properties No of classes tor, No members/class* INPUTS & ACTIONS Desisting associations Elength of chain	INPUTS OUTPUTS verbal/symbolic verbal
	recognition mode	generalizations purtial proficiency	ACTIONS E integrative strength	ACTIONS vi perceptual viii viccal vii motor ix tub vocal

IIA. Select Preparatory Practice Progression(s)

1	UNIT SIZE		Γ	мон	DE	PROMPTING/FADING			CONTEST		FREQUENCY or VARIATION		
in:	shaping gradual increases in: quantity quality		f examples or demonstrations g, verbal cues h, visual cues i diagramming, overviews			I. principles/gracedures k. altered cs/mmon/ criterion. I. errors/criteman m. editing/critemin n. backward sterning		repetition p. review q. varied examples					
		2	٠	A	В	С	D	Ε	F	1	vi	vii	
1_	q	ο∙р		9	9				9-1	•	h	1	
3	bq	1.0·p		g h t.	ı-g					<u></u>	h		
4	Ьq	1-0-E		gh	1-9	≀·g				9	h	11_	
3+4	(b.i.d)	1-0-£	,	(g·h)	1·g	1-9				(c·d • 1	<u> </u>		
5	bo	1.0.1	,			1-g-0-p	b-g-l					<u> </u>	
6	a-f-m-n	о∙р						ø n		I		#-m-n	
7	,	0·p				T			g h-j			1	

III. Plan Behavior Control

PROMPT - OBSERVATION - ATTENTION	PROVIDE FEEDBACK	REINFORCE PRACTICE	PROVIDE DELAYED REINFORCEMENT
Advance Organizers statement of objectives instructions Cues visual or verbal formats, diagrams	Correctness of Answers (Solutions)stanctied_washable forcomparisondiscrimination practicere: correct outputs	Intrinsic Reinforcersinteresting materials Extrinsic Reinforcerssocialmonetary activitiesgrades	Extrinsic Reinforcers social monetary sctivities
. , checklists			



NOTE: --Row IB describes the three types of criterion behavior it is planned to have students practice at the tail end of the instructional program.

- --Row IIB describes the types of prior practice it is planned to use in preparing students to be able to engage in practice of the criterion behavior.
- --Row IV describes the selection of media required to permit the above types of practice.

PLAN INSTRUCTIONAL STRATEGIES

IB. Design Criterion Practice

	GIVEN as	INPUT	STUDENT WILL	take ACTION	RESULTING IN	OUTPUT
	(1) Terms "synony "antonym"	m" and	Define them and examples	give two	Illustrated def	inition
EXAMPLE(S) properties of	(2) Single nouns, adjectives ar give a synony antonym	ed told to	Will produce th	em .	Correct synonym	or antonym
additional examples	(3) Pairs of word	ls	Will indicate ware synonyms, a neither		Correct identif	ication

IIB. Design Preparatory Practice Progression

IIC. Characterize

PRDGRESSIDN	given as IN	IPUT student will	take ACTION	resulting in	OUTPUT		MODE	
Recognition 1st	Pairs of words; verbal cues to assist; easy examples, e.g., big/large	Indicate in they mean thing, or different, thing opposite	the same something or some-		lationship ings of	\subseteq	bal/symboli ironmental	DUTPUTS i iii
Recognition 2nd	Pairs identified having the same opposite meaning.	or or antonym	ts synonyms is	Correct id tion	entifica-	v tran	orealistic osient CTIDNS	(*)
Editing and production 3rd	Single words	Produce a or antonym		Correct sy antonym	nonym or	viii voca		iting

IV. Select Media

	UTPUT DI					
r. <u>print</u> s. r.1 verbal s.1 r.2 pictorial s.2 s.3 r verbal/symboli			.1 people (behavior) t.1 film, T .2 slides, 1 .2 simulat .3 events t.4 audio-t			
		} -	,			
INPUTS >	iii	1.	III	visual		
Υ	audio	visual	audio	v transient	non-v.	
realistic	s.1		s.2	s.3	s.1 s.2	
iv non- realistic	1.4	(1) r.2 1.1 r.2 1.3	1.4	t.1 t.3	1.2 1.3	

ACTION	CAPABILI	TY / RECO	RD CAP	ABILITY			
performance accommodation			record capabilities				
t.3 simulator s.2 objects, equipment (manipulanda)			u. t.1 t.4	paper an film, T\ audio ta	′		
DUTPUTS / verbal/symbolic			ii environmental				
ACTIONS	ш	~	in	IV	٧	non-v.	
vi & ix	t.4	u		u			
٧11		0	1.4	u	11	s.2 1.3	
viii	t.4						



INSTRUCTIONS

The program you are to revise appears on page 1.14 in this section.

Your revision should be based on the data summarizing errors made by students on the program (on page 1.15) and on data summarizing errors made on the test given to students after they completed taking the program (on page 1.17).

CONTENTS IN THIS SECTION

FORM NO.	TITLE	PAGE
FORM 1.2(1)	Developing instructional materials	1.14
FORM J.2(1)	Summary of errors on program	1.15
	The CRITERION TEST	1.16
FORM J.2(2)	Errors on the CRITERION TEST	1.17

YOUR ASSIGNMENT

- (1) Review the error data provided in this section and then revise the program which appears on page 1.14. Your revisions may consist of:
 - --changing existing problems
 - --adding or subtracting problems
 - --combining problems
- (2) Try out your revised program with at least one student (preferably five students).
- (3) YOUR PRODUCT WILL BE A REVISED PROGRAM.



--This program was developed on the basis of the analyses which have NOTE: appeared on the preceding pages.

-- Based on the new data appearing on page 1.15, you will revise this

√€n ξX=

Form I.2	1)	DEV	ELOPING INSTRUCT; ONAL MAT
LESSON	(SUB-) CRIT	TERION BEHAVIOR	
	MAXIMUM ASSISTANCE	INTERMEDIATE ASSISTANCE	NO ASSISTANCE
RECOGNIZE	I Next to each pair of words, indicate with an X whether the words have similar meanings, opposite meanings, or neither: SON small/big big/large small/pretty	II Words having similar meanings are called "snyonyms." Words having opposite meanings are called "antonyms." Next to each of the following pairs of words, write in either "synonym," "antonym," or "neither." 4. small/big 5. big/large 6. small/large	III Match up these definitions: A. Words with similar meaning B. Words with opposite meaning 7 synonyms 8 antenyms
EDIT	IV Someone incorrectly called this pair of adjectives antonyms: quick/fast What should they have called them? 9	V This is an incorrect definition for the word "synonyms." Change the definition. 10. "Synonyms are words having opposite meanings."	VI is this a correct destriction son the word "antonoms"? It not, change it and make it correct 11. "Antonoms are words having the same meanings."
PRODUCE	VII Indicate whether each of these pairs is a synonym, antonym, or neither. SAN 12. tall/short 13. truth/lie 14. boat/house 15. auto/car 16. gold/silver	VIII Write a synonym and an antonym for each of the following words: 17. happiness 18. practical 19. intelligent 20. return 21. tired Also write another word for each which is neither a synonym nor an antonym.	IX Define the terms "synenym" and give two of your own examples for each. 22.



--The hash marks appear in the row which indicates what the nature of the error is; e.g., for item #3, six students incorrectly called --This page summarizes the errors made by students on each of the twenty-three problems in the program on page 1.14 (opposite). NOTE:

SUMMARY OF ERRORS ON CAPFETHONCIEST Each response in the program is treated as a practice item. Therefore, there are results for 23 items (rather than just 9). Twenty people took the program. 7.7 24 = # $\alpha \times$ ន 22 丰 22 20 21 21 季 2 18 19 VIII 5 Ξ ~ 18 --1111 =111 1 ٩ 9 12 15 14 | = 7 13 3 12 12 =|5 Ξ "small/pretty" synonymous. 의> 美言 9 ISUB-J CRITERION BEHAVIOR 9 111 VI Ŧ 6 = 8 Ξ 幸 9 幸 5 11 2 丰 4 ¥ m က ~ where applicable ITEM #'S Options Endorsed **ACTION transfer** Tatal Number of Peopls Making Errors % of Group Making Errors N = 20 Requirements *synonym *antonym INPUT transfer LESSON *neither Performance ACTION recall INPUT recall Form J.2(1)



:

This is the Criterion TEST taken from the test development FORM F.2(1) (which appears on page 1.7)

Create nowr own examples of two sunonums: 9. /	Create now examples of two announms:	11.	In the spaces preceded, write in a sinonim and an antonim for the following words:	13. quich	14. often 15. departed 16. begin 17. niches 18. warmth	19. build 20. handsome
For each pair of words, indicate with a check whether it is a synonym (S), antonym (A), or neither (N).	3 A N 1. modern/ancient	2. nadio/television 3. nepaired/fixed	4. difference/libreners 5. written/spoken	6. less/sever than	In your own words, define the following terms:	8. antonim:



TEST ERRORS* TOTAL No. of Items --Use these data (along with program errors on page 1.15) as a basis for revising the program. TRANSFER No. of Items -- Complete the FORM by tabulating across rows and down columns. NOTE: --Errors on the test (opposite) are summarized in this FORM. RECALL No. of 26 27 22 23 24 22 "all test items are TRANSFER items 20 21 18 19 9 10 11 12 13 14 15 16 17 ITEM NUMBERS (SUB-) CRITERION BEHAVIOR [8 7 _ 2 4 N = 20 students က 7 STUDENTS NOSS37 نه نه ą. ું 9. ᅸ ڼ. **4**. Ē. ż 6 힉 Ę r. Form J.2(2) J



In making your revisions of the program on page 1.14 either use blank paper or a blank FORM 1.2(1).*

*Blank forms are available either in the HANDBOOK sub-volume "I" or "X."



DO NOT TURN PAGE UNTIL YOU HAVE COMPLETED YOUR REVISION OF THE PROGRAM

After you have completed your revision of the program, refer to the suggested revision which appears on page 1.21 for comparison purposes. Your revision is, of course, not very likely to look like the one printed here. However, if you can provide a rationale for your own revision, and, more important, if you try out your revised program and it works, matching the suggested revision exactly becomes irrelevant.

Try out your revised program with at least one student.



ANSWER: SUGGESTED REVISIONS

Before Cell #1: Add these two items 1a. Think about the meaning of these two words: large - small These two words: Mean the same thing Have opposite meanings	The words "boy" and "dog" don't mean the same thing. They also don't have opposite meanings. How about these two words: cheerful - poor Do they: Mean the same thing Have opposite meanings Neither
Following Cell #VI: Add these two items 6a. Here is an example of 6b. antonyms: good - bad Make up your own example of an antonym.	Here is an example of synonyms: sad - unhappy Make up your own example of a synonym.
Now, in your own words, define "antonyms." Following Cell #VII: Add this item	Now, in your own words, define "synonyms."
7a. Your task is to make up a word to fill the blanks: Synonim Antonym Neither unhappy building brave - courageous distant fear - fright courage	



FINAL EXERCISE #2 DEVELOPING AN INSTRUCTIONAL PROGRAM

NOT TO BE PERFORMED UNTIL ALL WORKBOOK EXERCISES ASSOCIATED WITH HANDBOOK SECTION "I" HAVE BEEN COMPLETED.



FINAL EXERCISE #2: Developing an Instructional Program

Before doing this exercise, you should have completed the following tasks:

(1) Read HANDBOOK Section "I": DEVELOP INSTRUCTIONAL MATERIALS

and

(2) Do the WORKBOOK exercises associated with Section "I."

Your assignment in this exercise is to perform TASK I; "developing an instructional program." As a basis for performing this task, starting on the next page you will be given completed results for prior tasks in the materials development process.

Following your review of these results, you are to develop your own program using materials provided in the section beginning on page 2.13.



Before doing the 'materials development' assignment, review the completed FORMS which contain the results of PRIOR DEVELOPMENT TASKS.

RESULTS OF PRIOR DEVELOPMENT TASKS WHICH ARE MADE AVAILABLE TO YOU

TASK LABEL	TASK TITLE	FORM NO.
В	Task analysis, learning analysis, competency analysis, and mode analysis	A.5(4)
D	Statement of objectives	D.2(1) and D.2(2)
E	Simulation plans	E.1(1)
F	Test development	F.2(1)
G	Instructional strategies	G.1(2)

Review the results of these prior TASKS which begin on the next page. They are the same ones as used in FINAL EXERCISE #1.

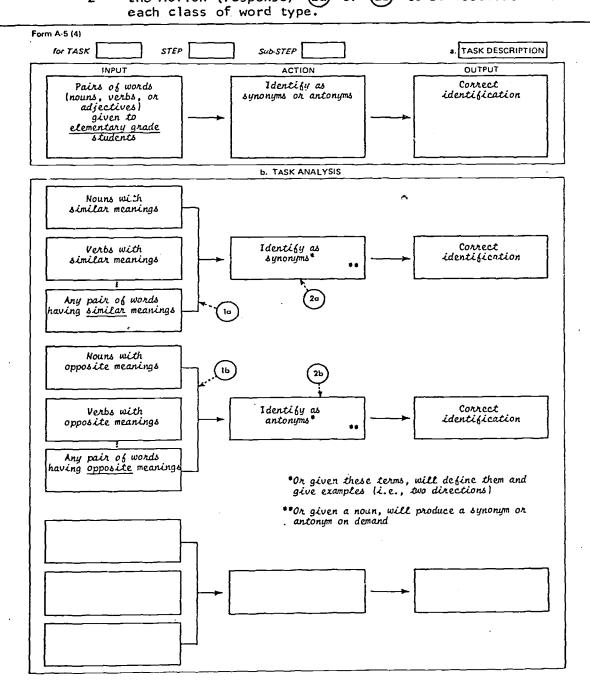


NOTE: Section "b" of FORM A.5(4) identifies:

1 --the classes of word types (a) and (b) which have to be discriminated one from the other.

--the variety of word types within class la and within class lb which have to be generalized (seen as being similar).

2 the ACTION (response) (2a) or (2b) to be associated with





NOTE:

- The endorsement of the TRANSFER boxes in the column marked "competency analysis" signifies that on a test the learner will be required to respond to new examples (those not encountered during instructions).
- There is an endorsement of "hi" anticipated generalization difficulty in section "c" of the FORM due to the large number of new words in the language the learner may be faced with.

COMPETENCY	c. LEARNING ANALYSIS	d. MODE ANALYSIS
ANALYSIS	level of difficulty in acquiring	U. HIODE ANALYSIS
	DISCRIMINATIONS	
	dur to hi med 10	symbolic verbal environmental
	similarity X	realistic X
	No. of properties X	VISUAL
INPUT	No. of inputs X	reProduced/ fabricated
	GENERALIZATIONS	
$\overline{}$	hi med lo	realistic
\odot	dissimilarity X	AUDIO
recall 🔾 🗆	No. of properties X	reproduced/ fabricated
transfer 🗵	2 No. of inputs X	OTHER: Kinavisthetic, sinell, taste
	ASSOCIATIONS due to	
	▼	perceptual motor virial inb/vocal
	No. of associations X	recognition
	associative strength of other actions	
ACTION/	GENERALIZATIONS	
CHAIN	integrative strength of action X	ediling
	CHAINS	
	length of chain	production
recall 🗆	1 1	
	output discrimination problems	
transfer 🗵	associative strength of other actions	
	DISCRIMINATIONS	symbolic verbat environmenta
	∇ ni meo io	
	similarity	realistic X
	No. of properties	VISUAL
OUTOUT	No. of inputs	reproduced/ fabricated
OUTPUT	GENERALIZATIONS	
	hi med lo	realistic
	dissimilarity	AUDIO
recall 🗆	No. of properties	reproduced/ fabricated
transfer 🚨	No. of inputs	OTHEH: Kinaesthetic, smell, taste



NOTE: --There are three criterion objectives (one on each row) for the program which has already been prepared and which you will revise.

-- Each statement identifies (in each column):

- . *what will be presented to the student (GIVEN)
- .. what he will do (STUDENT WILL)
- .. the output and its standards (RESULTING IN)

Form D.2(1) LESSON SPECIFICATION OF OBJECTIVES RESULTING IN **GIVEN** STUDENT WILL Critérion Inputs Critérion Actions Criterion Outputs mode: visual/verbal/etc. mode: recognition, editing, production mode: visual/verbal/etc. ● limits, standards o number of examples from class ealternatives: new and/or old examples new and/or old examples mode: perceptual/motor/vocal/sub-voca equantitative: amount /degree/Lime limits typical/atypical conditions • qualitatere e availability of performance aids CRITERION Correct identification Pairs of words inouns. Identify them as verbs, or adjectives) synonyms or antonyms 100% Both new and old examples of synonyms or antonyms CRITERION Terms "synonym" and Will define the terms in Correct definition and examples "antonum" his own words and give two (new) examples of 100% each 2. CRITERION Correct synonym Single words (high Produce a synonym or an frequency words) antonym or antonym 100% -Request for either a synonym or antonym



- NOTE: --The objectives on the opposite page are used by the <u>developer</u>.

 The ''objectives'' on this page are given to the student when he goes through the program which is developed.
 - -- The first two columns (GIVEN and YOU WILL) reproduce the information used by the developer.
 - --The third column identifies for the student what he has to learn
 in order to be able to perform what is identified in the first two
 columns.

Form D.2(2) STATEMENT OF OBJECTIVES LESSON FOR STUDENTS YOU MUST LEARN TO GIVEN YOU WILL Inputs Actions a distinguish between examples from # input classes objects, people, events, selent, edit, or produce words, symbols, etc. on the basis of # properties type of action e.g., point to, label, write, their properties see similarity classify, etc. among examples e examples: within each of the # input classes number RESULTING IN new or old on the basis of properties Outputs a availability of performance aids associate one of objects, events, words, symbols, actions with each one of the . # input classes typical/atypical conditions e exhibit alternative their properties (quantity/quality) problem format e.g., single input vs. multiple exhibit the series of standards of acceptability associations in the chain -Given pairs of nouns You will identify the -You must learn to tell pairs as being synonyms the difference between which are either two types of relationsynonyms or antonyms or antonyms and with the aid of a ships between words special dictionary to -These relationships are hased on similarity or 1. look up words you may not know dissimilarity of meaning -Given the terms "synonym" and "antonym" -You will also have to You will be expected to define them in your own remember which tupe of relationship is called words and to provide a synonym and which is two (correct) examples called an antonym of each (your own) 2. -You will be expected to -Given a noun produce either a synonym for it or an antonym -You will be expected 3. to get all test items correct



NOTE: --The decision whether or not to have students practice with a simulated version of the criterion behavior is based on two sets of criteria, one instructional and the other logistical.

-- 1 The "N" entries in the top portion of the FORM signify that on all criteria there is a NEGLIGIBLE need for simulation.

--Accordingly, there are no simulation plans entered in the bottom section of the FORM.

Form E.1(1) SIMULATION DECISIONS LESSON OBJECTIVE a, assessing simulation needs due to LOGISTICAL CONSIDERATIONS INSTRUCTIONAL CONSIDERATIONS manipulation standardization downtime cost danger sampling N b, planning simulation when needed No simulation needed - all paper and pencil INPUT types SIMULATION PLANS: visual, audio, etc. PROPERTIES: physical, psychological people man made objects natural objects events words symbols **ACTION** types perceptual motor vocat sub-vocal **OUTPUT** types peopie man made objects natural objects events words symbols other



NOTE: -- The TEST to be given to students is outlined on this FORM.

- --Three types of test items la , lb , & lc are identified and a total of twenty items listed in row No. 1.
- -- The remaining two rows indicate what the student is expected to do.

Form F.2(1)

"GIVEN"	INFORMAT la	TION YOU PLAN TO GIVE TO STU 16	JDENT 1c
- Question or Problem Syno oh n INPUTS (new/old) (1) AIDS (when applicable) (3) ANSWER (5)	each pair, check ther it is a nnym, an antonym, neither: modern/ancient radio/television repaired/fixed difference/likeness written/spoken less/fewer than	In your own words define the terms: (7) "synonym" and (8) "antonym" Give two examples of each (of your own): (9), (10) synonyms and (11), (12) antonyms	Give me a synonym and an antonym for the following words: [13] quick [14] often [15] departed [16] begin [17] riches [18] wormth [19] build [20] handsome

"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO					
	2a. Checks "synonym," "antonym," or "neither" for each pair	2b. Produces a definition and two examples for each term	2c. Produces a synonym and an antonym			

"RESULTING IN"		WHAT THE STUDENT IS EXPECTED TO TURN OUT					
- OUTPUT answers product Type of Scoring Standards for Scoring	3a. 100	s correct	36.	Idea of "similar meaning" and "opposite meaning" present in definition; two examples for each term		Similar and opposite meanings acceptable without attention to fine shadings in meaning	



NOTE: --Pages 1.10 and 1.11 contain the FORM used in planning an instructional strategy for the performance described and analyzed on the preceding pages.

- -- Row IA on this page: The circled endorsements <u>summarize</u> the analyses entered on pages 1.4 and 1.5.
- --Row IIA: The endorsements in row IA serve as a basis for entering the matrix on row IIA and thereby identifying potential strategies.
- --Row III: This now provides a reminder of other procedures which need to be performed.

form G 1(2)		
LESSON	CRITERION BEHAVOR	

IA. Characterize Criterion Practice Requirements

PERFORMANCE	LEARNING PROBLEMS	PROBLEM SOURCE	моое
simulation aids evaliable two directions franction delayed family recognition mode	inputs discriminations quentializations inputs & ACTIONS b associations chains ACTIONS quentilizations	INPUTS A similarity (dis.) B No of properties C No of classes (or, No members/class) INPUTS & ACTIONS D existing associations E length of chain ACTIONS F integrative strength	INPUTS OUTPUTS verbal/symbolic in environmental in audio in noi realistic v transient ACTIONS vi Perceptual in wib vocal

HA. Select Preparatory Practice Progression(s)

UNIT SIZE		MODE		PROMPTING/FAOING		;	CONTENT		FREQUENCY of VARIATION					
·n·	shapping gradual increases in: . quantity . quality		b R/E/P c visual/verbal d concrete/abstract e procedures/principles		f examples or demonstrations g verbal cues h visual cues r diagramming, overviews		ons	J principles/procedures k altered chilerian/ criterian l errors/criterian m editing/criterian n backward chaiming		O resolution p review q varied examples				
		2		Α	В	С	0		E	· F	,		vi	vii
1	q	0.0		9	9					91			h	<u> </u>
3	bq	100		ghk	· g] -					<u> </u>		h	<u> </u>
4	b-q	100		g h	1.9	19					9		h	 '
3+4	(bii.d)	1-0·p		(10)	1-g	i-g				<u></u>	(ne)	2		<u> </u>
5	bo	1-0-0				i g o·p	b-g-l				L			
6	a-f-m-n	0.0						•	n	<u> </u>	<u> </u>			a-m n
7	1	0.0								ghi	L			1 '

III. Plan Behavior Control

PROMPT • OBSERVATION • ATTENTION	PROVIOE FEEOBACK	REINFORCE PRACTICE	PROVIDE OELAYEO REINFORCEMENT
Advance Organizers statement of objectives instructions Cues visual or verbal formats, diagrams checklists	Correctness of Answers (Solutions) standard available for comparison discrimination practice re-correct outputs	Intrinsic Reinforcersinteresting marerials Extrinsic Reinforcerssocial monetally activitiesgrades	Extrinsic Reinforcers . vocial . cionetary . activities



NOTE: --Row IB describes the three types of criterion behavior it is planned to have students practice at the tail end of the instructional program.

--Row IIB describes the types of prior practice it is planned to use in preparing students to be able to engage in practice of the criterion behavior.

--Row IV describes the selection of media required to permit the above types of practice.

PLAN INSTRUCTIONAL STRATEGIES

	GIVEN as	INPUT	STUDENT WILL	take ACTION	RESULTING IN	OUTPUT
	(1) Terms "synon "antonym"	m" and	Define them and examples	give two	Illustrated defi	inition
EXAMPLE(S) properties of	(2) Single nouns adjectives a give a synon antonym	nd told to	Will produce the	חש	Correct synonym	or antonym
additional examples	(3) Pairs of word	is	Will indicate whare synonyms, ar		Correct identifi	cation

neither

· IIC. Characterize IIB. Design Preparatory Practice Progression PROGRESSION INPUT student will take ACTION resulting in OUTPUT MODE given as OUTPUTS INPUTS Correct identifica-Indicate whether Recognition Pairs of words; D verbal/symbolic verbal cues to they mean the same tion of relationship assist; easy thing, or something among meanings of 1st environmental examples, e.g., different, or someword pairs big/large thing opposite audio Correct identifica-Pairs identified as Recognition Identify as synonyms non-realistic or antonyms tion having the same or transient opposite meanings 2nd ACTIONS perceptual Correct synonym or Single words Produce a synonym Editing writing vii D motor and or antonym antonym production vocal subvocal

IV. Select Media

r. prin r.1 verb r 2 picti	- •I	s env s 1 peo s.2 obj	oronmental ple (behavio ects ints	t.3 simu	TV s, projectors			
r verbal/symbolic								
INPUTS >	audio	visual	wdio !!!	v Hansient	non-v			
realistic	s 1	-	s 2 s 3	,3	s 1 s.2			
non- realistic	14	(1) r 2 11 12 1.3	14	t.1 t.3	t,2 t 3			

ACTION CAPABILITY / RECORD CAPABILITY									
performance accommodation record capabilities									
5 2 Ot	ulator ojects, equip manipuland	u. t.1 t.4	paper an film, TV audio ta	,					
OUTPUTS	, verbal	/symbolic	ri environmental						
ACTIONS	161	.v	131	IV	٧	non-v.			
vi & ix	14	U		U					
VII		0	14	U	ť 1	13			
Viil	t.4								



YOUR ASSIGNMENT

Based on the materials you have just reviewed, develop your own program:

- (1) Use the FORM which appears on page 2.15 in your program. Create practice problems to go with the diagram. The diagram should be designed to provide the necessary cuing to your students.
- (2) When completed, administer the program and the criterion test to at least one student (preferably five students).
- (3) Sit with the student as he goes through the program. When he makes errors, probe for their sources.
- (4) Revise the program in the light of tryout results.

YOUR PRODUCTS WILL INCLUDE:

- --an instructional program
- --protocols of student responses to probès
- --program and test results
- --a revised program

CONTENTS IN THIS SECTION

FORM NO.	TITLE	PAGE
	Diagram for use in program	2.15



CONCEPTS		SYNONYM		ANTONYM		NEITHER
Examples			vs		vs	
Definition					į	
DEFINING ROPERTIES	>					·
					-	
OSSIBLE ARIATIONS	>					
			-			
ISE IN A SENTENCE	D			·		
ERIC Prol tax Proceded by ERIC				2.15/2.16		

DO NOT TURN PAGE UNTIL YOU HAVE DEVELOPED YOUR OWN PROGRAM

AFTER you have completed developing your own program, and AFTER you have tried it out with at least one student, refer to the next several pages for a sample program using a diagram.



SYNONYM handsome - good Looking distant - fan defend - protect big - lange - A word that has the same meaning as another word - Two words that have the same on similar meaning are called "synonyma" (plunal) - Versious parts of speech can have active and some horesty - truthfulness (plunal) - Two nouns: Nonesty - truthfulness Nonesty - truthfulness Nonesty - truthfulness Nonesty - quichly - "Bad" is a synonym for "evit" are synonym wow. Sentence USE IN A SENTENCE - "Bad" and "evit" are synonymous - "Bad" and "good" are antonym for antonym so an antonym so and so speech can have antonym so an antonym so ant				_			
handsome - good looking distant - fan defend - protect big - large Definition Definition - A word that has the same meaning as another word received that have the same or similar meaning are called "symonyms" (plural) - Two words that have the same have symonyms for each other: - Two nouns: - honesty - truthfulness honesty - true adjectives: - to enter - to go in - Two adjectives: - napidity - quickly - "Bad" is a synonym for "good" - "Bad" and "evil" are synonyms - "Bad" and "good" are antonyms - "Bad" and "good" are antonyms - "Bad" and "good" are antonyms	CONCEPTS		SYNONYM		ANTONYM		NEITHER
-A word that has the same meaning as another word -Two words that have the same or similar meaning are called "synonyms" (plural) -Various parts of speech can have synonyms for each other: -Two nouns: honesty - truthfulness honesty - truthfulness to enter - to go in -Two adjectives: near - close -Two adverbs: rapidly - quickly -"Bad" is a synonym for "evit" -"Bad" and "evit" are synonyms -"Bad" and "good" are antonym for antonyms -"Bad" and "good" are antonyms -"Bad" and "evit" are synonymous			distant - far defend - protect	vs	distant/close defend/attrck	vs	distant crowded defend Leave
-A word that has the same meaning as another word -Two words that have the same or similar meaning are called "synonyma" (plural) -Various parts of speech can have synonyma for each other: -Two nouns: honesty - truthfulness -Two verbs: to enter - to go in -Two adjectives: near - close -Two adverbs: rapidly - quickly -"Bad" is a synonym for "evil" -"Bad" and "evil" are synonymous -"Bad" and "evil" are synonyms -"Bad" and "good" are antonyms -"Bad" and "evil" are synonyms	Definition						
meaning as another word Two words that have the same or similar meaning are called "synonyma" (plural) -Various parts of speech can have synonyms for each other: -Two nouns: honesty - truthfulness honesty - truthfulness -Two adjectives: honesty - to go in -Two adjectives: hone - close -Two adverbs: rapidly - quickly -"Bad" is a synonym for "good" -"Bad" and "evil" are synonymous -"Bad" and "good" are antonyms		٠				-	<u> </u>
Can have synonyms for each other: Two nouns: honesty - truthfulness Two verbs: to enter - to go in Two adjectives: near - close Two adverbs: rapidly - quickly -"Bad" is a synonym for verie" "Bad" and "evil" are synonymous -"Bad" and "evil" are antonyms -"Bad" and "evil" are synonymous -"Bad" and "evil" are antonyms -"Bad" and "good" are antonyms -"Bad" and "good" are antonyms		>	meaning as another word -Two words that have the same or similar meaning are called "synonyms"		opposite meaning to another word -Two words that have opposite meanings are called "antonyms"		a synonym nor an antonym
Can have synonyms for each other: Two nouns: honesty - truthfulness Two verbs: to enter - to go in Two adjectives: near - close Two adverbs: rapidly - quickly -"Bad" is a synonym for verie" "Bad" and "evil" are synonymous -"Bad" and "evil" are antonyms -"Bad" and "evil" are synonymous -"Bad" and "evil" are antonyms -"Bad" and "good" are antonyms -"Bad" and "good" are antonyms			-Various parts of speech			ı	· ·
USE IN A SENTENCE USE IN A SENTENCE "evil" -"Bad" and "evil" are antonyms -"Bad" and "evil" are synonymous "good" -"Bad" and "good" are antonyms "matching and "good" are antonyms "good" -"Bad" and "good" are antonyms	1 1	D	can have synonyms for each other: • Two nouns: honesty - truthfulness • Two verbs: to enter - to go in • Two adjectives: near - close • Two adverbs:		can have antonyms for each other: • Two nouns: honesty/dishonesty • Two verbs: to enter/to leave • Two adjectives: distant/close • Two adverbs:	T	honesty timeliness ••Two verbs: to enter to pay ••Two adjectives: distant rich ••Two adverbs:
USE IN A SENTENCE USE TO A SENTENCE "evil" -"Bad" and "evil" are antonyms -"Bad" and "evil" are antonyms Synonymous "good" -"Bad" and "good" are antonyms			-"Bad" is a sunonum for	1		2	
ERIC Pratical Provided by ERIC 2 18		D	"evil" -"Bad" and "evil" are synonyms -"Bad" and "evil" are		"good" -"Bad" and "good" are		
/ . 111	ERIC Prail fort Provided by EBIC		,		2 18		

1. Read the diagram and then classify the following pairs of words.

		Synonyms	Antonyms	<u>Neither</u>
a.	tall short			<u> </u>
b.	truth lie			
c.	boat house			
d.	auto car			
e.	gold silver			
f.	small big			
g.	replace return			· · ·
h.	storm house			
	cooperative uncooperative			
j.	jealous envious			

CONTINUED

DO NOT REFER TO THE DIAGRAM ANY LONGER

Here is	an example of antonyms:
•	your own example of an antonym.
Now, in	your own words, define "antonyms."
Here is	an example of synonyms:
sad -	unhappy
Make up	your own example of a synonym.
Now, in	your own words, define "synonyms."
This is definit	an incorrect definition for the word "synonyms." Change the
	ns are words having opposite meanings."
	a correct definition for the word "antonyms"? If not, chang
''Antony:	ns are words having the same meanings."
Write a	synonym <u>and</u> an antonym for each of the following words:
-practi	cal
-intell	igent
-return	
-tired	
Also wr antonym	ite another word for each which is neither a synonym nor an



/ -	examples for	each.	anu an	iconym an	d give tw	o or your	Own
				·			

FINAL EXERCISE #3 FORMULATING AN INSTRUCTIONAL STRATEGY

NOT TO BE PERFORMED UNTIL ALL WORKBOOK EXERCISES ASSOCIATED WITH HANDBOOK SECTION "G" HAVE BEEN COMPLETED.



FINAL EXERCISE #3: Formulating an Instructional Strategy

Before doing this exercise, you should have completed the following tasks:

(1) Read HANDBOOK Section "G": FORMULATE INSTRUCTIONAL STRATEGIES

and

(2) Do the WORKBOOK exercises associated with Section "G."

Your assignment in this exercise is to perform TASK G: "formulating instructional strategies." As a basis for performing this task, starting on the next page you will be given completed results for prior tasks in the materials development process.

Following your review of these results, you are to formulate an instructional strategy using the FORMS which appear in the section beginning on page 3.13.



Before doing the instructional strategy assignment, review the completed FORMS which contain the results of PRIOR DEVELOPMENT TASKS.

RESULTS OF PRIOR DEVELOPMENT TASKS WHICH ARE MADE AVAILABLE TO YOU

TASK LABEL	TASK TITLE	FORM NO.
В	Task analysis, learning analysis, competency analysis, and mode analysis	A.5(4)
D	Statement of objectives	D.2(1) and D.2(2)
E	Simulation plans	E.1(1)
F	Test development	F.2(1)

Review the results of these prior TASKS beginning on the next page.

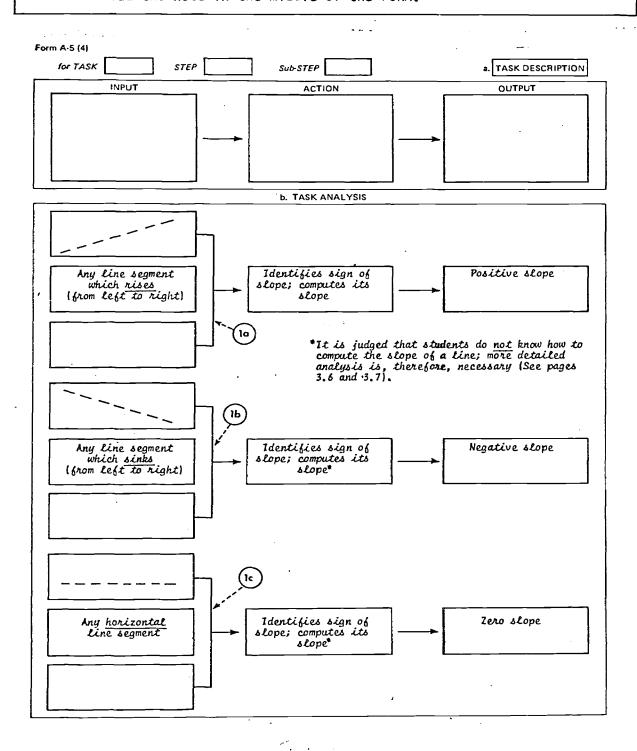
These results reflect analyses of what is involved in teaching (secondary grade) students: (1) to identify the sign of the slope of line segments, and (2) to compute the slopes of those line segments.



NOTE: The task analysis results identifies three classes of INPUT situations which have to be discriminated:

(la), (lb), + (lc)

-- Read the note in the middle of the FORM.





NOTE: --The results of the competency analyses (the first column) reveal that in the criterion performance, TRANSFER will be a requirement; i.e., students will be given new lines whose styles must be computed.

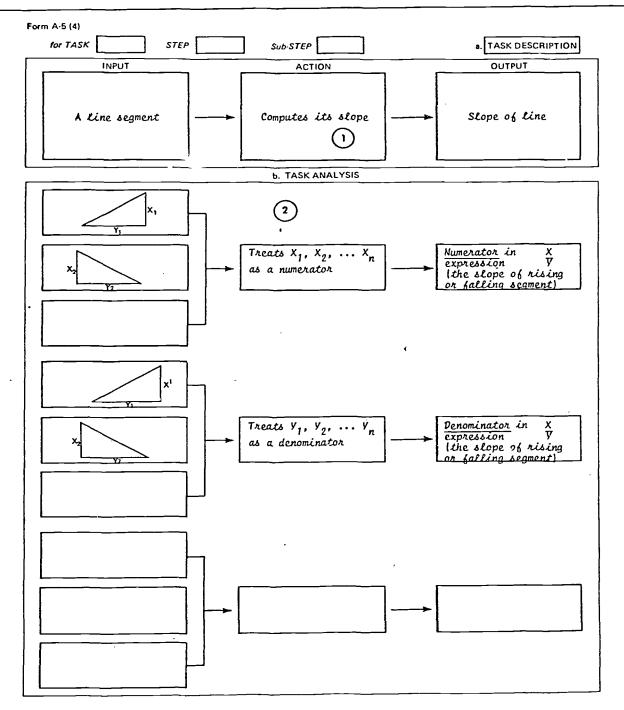
--The results of the learning analysis that there is likely to be little difficulty learning any of the component skills (discriminations, generalizations, or associations).

COMPETE		c, LEARNING ANALYSIS			d. MODE ANALYSIS					
	-	level of difficulty in acqui	ring	ı						
		DI	SCRIMIN	ATIONS			symbolic	verbal	environmental	
		due to ▽	hi m	ed to	[37711DOTIC	Vergar	1	
		similarity		x		realistic	х			
		No. of propertirs		X	VISUAL				 	
INPUT	Г	No. of inputs	$ldsymbol{f L}$	X	}	reproduced/ fabricated				
		GE	NERALI	ZATIONS					+	
\bigcirc)		hi m	ed lo	}	realistic				
		dissimilarity		x	AUDIO				1	
recall		No. of properties		. x		reproduced/ fabricated]]	
transfer	Š	No. of aputs			OTHER:	Kinaesthetic,	smell, taste			
			ASSOC	IATIONS	<u> </u>					
		. due to	hi t	med Iu		perceptua	motor	vocal	sub/vocal	
		No. of association	ons	X	}				Ţ	
		associative strength of other action	ons		recognitio	n				
		GE	NERALI	ZATIONS		 	 	 		
ACŢIOI CHAIN		integrative strength of acti		med hi	editing					
			CI	HAINS	1					
			hi	med to	productio	n	X			
		length of cha	in	X]	1		.ш		
recall		output discrimination proble	775	\perp			writing			
transfer	呇	associative strength of other action	ons		}		_			
			SCRIMII	NATIONS			symbolic	verbal	environmental	
		due to ▽	hi m	ned to				1	1	
		similarity				realistic	×	ĺ	1 1	
		No, of properties		1 1	VISUAL			}	1	
		No. of inputs		$\neg \neg$		reproduced/				
OUTPL	JΤ	GF	NERALL	ZATIONS					4	
		g.		ned lo		realistic		1		
		dissimilarity			AUDIO	realistic				
recall		No. of properties				reproduced/ fabricated				
transfer	Ø	No. of inputs			OTHER	Kinarsthetic.	smell, taste			



NOTE: -- (1) As noted by the asterisk on page 3.4, learners do not know how to compute a slope, the ACTION described in the top "task description" row.

-- 2 Accordingly, a breakdown of that ACTION into its component skills is made. Part of this breakdown appears in the TASK ANALYSIS section of this diagram.





COMPETE ANALYSI		c. LEARNING ANALYS	IS			d. MODE ANALYSIS				
	_	level of difficulty in acqui	ring —							
		due to	SCRII	MINA med	TIONS			symbolic	verbal	environmental
		∇ similarity			X		realistic	x		
		No. of properties		<u> </u>	X	VISUAL				+
INPUT	r '	No. of inputs		<u> </u>	X		reproduced/ fabricated		}	}
		GE	NERA	ALIZA	TIONS				 	+
		. .	hi	med	lo 1		realistic	j		1 1
		dissimilarity			X	AUDIO			<u> </u>	
recall		No. of properties		<u> </u>	х		reproduced/ fabricated			
transfer	A	No. of inputs		<u> </u>	X	OTHER:	Kinaesthetic,	smell, taste		
		4	ASS	SOCIA	TIONS					
	,	due to	_	hi me	7)	perceptua	l motor	vocal	sub/vocal
		No. of association	ons		X					
		associative strength of other action	ons			recognitio	n .	ł		
		GE	NERA	ALIZA	TIONS	1	-		 	+
ACTIO CHAIN		integrative strength of act		hi ine		editing				
				СНА	INS	1				
,	:		_	hi me	d lo	productio	n	X	ļ	
		length of ch	ain		X		L	┸	<u> </u>	
recall		output discrimination proble	ms			-		writi	ng	
transfer	凶	associative strength of other action	ons	<u> </u>						
		D due to	ISCRI hi	IMINA med	TIONS			symbolic	verbal	environmental
			<u> </u>	11100	\Box					T
		similarity	<u> </u>	1_	-		realistic	X	}	
		No. of properties				VISUAL		 		+
OUTRI	175	No. of inputs					reproduced/ fabricated			
OUTPU	, 	GE	NERA	ALIZA	TIONS			 	 	+
			hi	med	10		realistic			
		dissimilarity				AUDIO				
recall		No. of properties					reproduced/			
transfer		No. of inputs					fabricated	<u> </u>	<u> </u>	
					لــــــــــــــــــــــــــــــــــــــ	OTHER:	Kinaesthetic,	smell, taste		



LESSON	ſ		
	L_		

SPECIFICATION OF OBJECTIVES

	GIVEN		STUDENT WILL		RESULTING IN
ſ	Criterion Inputs		Criterion Actions		Criterion Outputs
ł	• mode: visual/verbal/etc.		• mode: recognition, editing, production		• mode: visual/verbal/etc.
	• number of examples from class	A	•alternatives: new and/or old examples		● limits, standards
	• new and/or old examples)	• mode: perceptual/motor/vocal/sub-vocal)	• quantitative: amount /degree/time limits
	typical/atypical conditions			V	l i
					• qualitative
	availability of performance aids				
	CRITERION BEHAVIOR				
1.	Given any horizontal, rising, or sinking line segment		Identifies the sign of the slope		Positive, negative, or zero slope correctly identified
		ı			
	PREPARATORY BEHAVIOR (SUB-CRITERION) Given any line segment		Will compute the slope of the line		Slope of line segment
•					
Į				Ì	



STATEMENT OF OBJECTIVES LESSON FOR STUDENTS YOU WILL GIVEN YOU MUST LEARN TO Inputs Actions distinguish between examples from objects, people, events, # input classes select, edit, or produce words, symbols, etc. on the basis of # properties type of action e.g., point to, label, write, their properties see similarity classify, etc. among examples examples: within each of the # input classes number **RESULTING IN** new or old on the basis of properties Outputs availability of performance aids associate one of objects, events, words, symbols, actions with each one of the # input classes typical/atypical conditions exhibit alternative their properties (quantity/quality) problem format actions e.g., single input vs. multiple exhibit the series of standards of acceptability choice associations in the chain CRITERION BEHAVIOR (1) Distinguish between three types of line Given any horizontal, Identifies the sign of segments (based on rising, or sinking line the slope their direction) and segment associate a value of 1. a "slope" for each tupe PREPARATORY BEHAVIOR (2) Follow procedures (SUB-CRITERION) for computing a slope: (a) distin-Will compute the slope Given any line segment guishing between of the line types of line 2. segments; (b) associating types of line segments with their role in computation (numerator/denominator) 3.

LESS	SON	OBJECTIVE SIMULA DECISION	
a	assessing simulation need	s due to	
	LOGISTICAI	CONSIDERATIONS INSTRUCTIONAL CONSIDERATIONS	
	downtime	cost danger sampling standardization manipulation	
	N	N N N	
b. p	planning simulation wher	needed	
	INPUT types	PROPERTIES: physical, psychological SIMULATION PLANS: visual, audio, etc.	
	people		
	man made objects	COED	
	natural objects	TION WELL	
	events	NO STHULATION NEEDED	
	words		
	symbols		
	other		
_ ا	ACTION types		
	perceptual		
	motor		
	vocal		
	sub-vocal		
١.	OUTPUT types		_
	people		
	man made objects		
	natural objects		
	events		
	words		
	symbols		
	other		

LESSON	OBJECTIVE FORM FOR TEST DEVELOPMENT
"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT
Instructions Question or Problem INPUTS (new/old) AIDS (when applicable)	What is the sign of the slope for each of these lines?
••ANSWER OPTIONS (when applicable)	d e

"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO
ACTIONS (new/old)	Gives sign of the slopes

"RESULTING IN"		WHAT THE STUDENT IS EXPECTED TO TURN OUT		
OUTPUT answers product Type of Scoring Standards for Scoring	(a) + (c) - (e) 0	(b) + (d) -		



LESSON	OBJECTIVE	FORM FOR TEST DEVELOPMEN

"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT			
- Instructions - Question or Problem - INPUTS (new/old) - AIDS (when applicable) - ANSWER OPTIONS (when applicable)	Compute the slope (a) line a	es of the following lines: (b) line b	(c) line c $X_1 = X_1$	

"STUDENT WILL"	WHAT	THE STUDENT IS EXPECTED	то ро
— ACTIONS (new/old) •• mode	Computes the slope (a) $\frac{1-3}{5-2}$ =	(b) $\frac{3-1}{6-1} =$	$\begin{cases} c_1 x_2 - x_1 = \\ y_2 - y_1 = \end{cases}$

"RESULTING IN"		WHAT THE STUDENT IS EXPECTED T	O TURN OUT
- OUTPUT ••answers ••product - Type of Scoring"	$(a) - \frac{2}{3}$	(b) 2 5	(c) See above
— Standards for Scoring			

YOUR ASSIGNMENT

Based on the materials you have just reviewed, formulate your own instructional strategy:

- (1) Fill in the FORM which appears on pages 3.14 and 3.15.
- (2) Develop an instructional program based on the strategy you have formulated. (If necessary, consult a mathematics text.)
- (3) Administer the program and the already developed tests (appearing on pages 3.11 and 3.12) to at least one student (preferably five students).
- (4) Sit with the student as he goes through the program. When he makes errors, probe for their sources.
- (5) Revise the program in the light of tryout results.

YOUR PRODUCTS WILL INCLUDE:

- --completed FORM G.1(2): an instructional strategy
- --an instructional program
- --protocols of student responses to probes
- --program and test data
- --a revised program

CONTENTS IN THIS SECTION

FORM NO.	TITLE	PAGE
G.1(2)	Plan instructional strategies	3.14-3.15



,	FSSOM	

CRITERION BEHAVIOR

1A. Characterize Criterion Practice Requirements

PERFORMANCE	LEARNING PROBLEMS	PROBLEM SOURCE	MODE
simulation aids available two directions transfer delayed basis	INPUTS 3 discriminations 4 generalizations INPUTS & ACTIONS 5 associations 6 chains	INPUTS A similarity (dis-) B No. of properties C No. of classes (or, No. members/class) INPUTS & ACTIONS D existing associations E length of chain	INPUTS OUTPUT i verbal/symbolic i ii environmental ii iii audio iii iv non-realistic iv v transient v
recognition mode	ACTIONS 7 generalizations partial proficiency	E length of chain ACTIONS F integrative strength	ACTIONS vi perceptual viii vocal. vii motor ix sub-vo

IIA. Select Preparatory Practice Progression(s)

	UNIT SIZE MODE		PROMP	PROMPTING/FADING		CONTEN	г	FREQUENCY or VARIATION				
in:	ing gradual in quantity quality	c. visual/verbal g. verbal cues		nes	k. altered criterion/ criterion l. errors/criterion m. editing/criterion			o. repetition p. review q. varied examples				
		2		Α	В	С	D	E	F	i	vi	vii
1	q	о-р		g	g				g-j	е	h	j
3	b-q	i-0-p		g-h-k	i-g	i					h	
4	b-q	i-o-p		g-h	i-g	i-g				g	h	j
3+4	b-i-q	i-o-p		g-h	i-g	i-g			1	c-d-e-i		
5	b-o	i-o-p				i-g-o-p	b-g-l					
6	a-f-m-n	0·p		-				a-n				a-m-n
7	i.	0·p			1				g·h-j	<u> </u>		j ,

III. Plan Behavior Control

PROMPT • OBSERVATION • ATTENTION	PROVIDE FEEDBACK	REINFORCE PRACTICE	PROVIDE DELAYED REINFORCEMENT
Advance Organizers statement of objectives instructions	Correctness of Answers (Solutions)standard available for comparisondiscrimination practice	Intrinsic Reinforcers interesting materials	Extrinsic Reinforcers social monetary activities
Cuesvisual or verbalformats, diagramschecklists	re: correct outputs	Extrinsic Reinforcerssocialmonetaryactivitiesgrades	
RIC.			

PLAN INSTRUCTIONAL STRATEGIES

IB. Design Criterion Practice

	GIVEN as	INPUT	STUDENT WILL	take ACTION	RESULTING IN	ОПТРП
EXAMPLE(S)						
properties of additional						
examples						
					-	

IIB. Design Preparatory Practice Progression

IIC. Characterize

PROGRESSION	given as	INPUT	student will	take ACTION	teime in	OUTDUT		
	given as		student Will	Take ACTION	resulting in	OUTPUT	MOI	
			ļ	i			INPUTS	OUTPUTS
4				;			i verbal/syn	nbolic
1st							ii environme	ental ii
							iii audio	<i>iii</i>
							// non-realis	tic /i
2nd							transient	
Zna							ACTION	<u> </u>
							ACTION	
	 						vi perceptua	I
							vii motor	
3rd					•		viii vocal	
							ix subvocal	

IV. Select Media

INPUT/OUTPUT DISPLAY								
r. prin r.1 verb r.2 pict	_			t.2 stide	TV s, projectors			
	/ verbal/s	symbolic	ii environmental					
INPUTS >	iii audiD	visual	iii au d io	visual				
<u> </u>				v transient	non-v.			
realistic	s. 1		s. 2 s. 3	s. 3	s.1 s.2			
iv non- realistic	1.4	r.1 r.2 t.1 t.2 t.3	t.4	t,1 t.3	t.2 t.3			

ACTION CAPABILITY / RECORD CAPABILITY									
performan	ce accommo	dation	record capabilities						
s.2 ot	ulator pjects, equip manipulanda	u. paper and pencil t.1 film, TV t.4 audio tape							
OUTPUTS i verbal/symbolic		/symbolic	ii environmental						
ACTIONS	rit	IV	iri	iv	٧	non-v.			
vi & ix	t.4	u ·		υ					
vii		u	t.4	u	t 1	s.2 t.3			
vili	t,4								



DO NOT TURN PAGE
UNTIL AFTER YOU HAVE COMPLETED
YOUR OWN FORM G.1(2)



Form	C	1	171

LESSON	1	CRITERION BEHAVIOR	

1A. Characterize Criterion Practice Requirements

	PERFORMANCE	LEARNING PROBLEMS	PROBLEM SOURCE	MODE
	simulation aids available two directions transfer	INPUTS discriminations generalizations INPUTS & ACTIONS 5 associations chains	INPUTS A similarity (dis-) B No. of properties C No. of classes (or. No. members/class) INPUTS & ACTIONS D existing associations	INPUTS outputs verbal/symbolic ii environmental iii audio iii vv nort-real/stic v transient
2	deiayed basis recogniti on mode	ACTIONS 7 generalizations partial proficiency	E length of chain ACTIONS Integrative strength	ACTIONS vi perceptual viii vocal viii motor ix sub-vocal

writing

IIA. Select Preparatory Practice Progression(s)

UNIT SIZE			MODE		PROMPT	PROMPTING/FADING		CONTENT		FREQUENCY or VARIATION		
in:	ng gradual inc Quantity Quality	reases	c.	R/E/P visual/verbal concrete/ab	stract	g. verbal cu		ns j. k. l. m. n.	principles/productives altered criterion criterion errors/criterio editing/criterio backward chai	on/ n on	o. repetition p. review q. varied ex	
v.		2		Α	В	С	D	E	F	i	vi	vii
1	0	o·ρ		g	g				9 i	(*)) h	i
3	p-d	i-o-p		g-h-k	ŀg					<u></u>	h	
4	b-q	1.0.b		g∙h	i-g	ı•g				g	h	j
3+4	Ģ.	1-0-p		g-h	ı-g	ı-g				c-d-e-i		
5	i≻c	i-o-p				ı-g-o-p	b-g-l	_				
6	a-f-m-n	o-p						a-n				a-m-n
7	i	0-p				T	T		g-h-j			j

III. Plan Behavior Control

PROMPT • OBSERVATION • ATTENTION	PROVIDE FEEDBACK	REINFORCE PRACTICE	PROVIDE DELAYED REINFORCEMENT
Advance Organizers statement of objectives instructions	Correctness of Answers (Solutions) standard available for comparison discrimination practice re: correct outputs	Intrinsic Reinforcersinteresting materials Extrinsic Reinforcers	Extrinsic Reinforcerssocialmonetaryactivities
Cuesvisual or verbaltormats, diagramschecklists		. social . monetary . activities . grades	,
D			

Design Criterion Practice

	GIVEN as INPL	T STUDENT WILL	take ACTION	RESULTING IN	OUTPUT
	(a) Line segment with positive, negative, or zero slopes	Identify sign	of slope	Correct identif	ication
examples examples	(b) One line segment wit X and Y values provided	Compute the sl	ope of the	Correct slope	

b. Design Frepa	ratory Practice Progression		-	IIC. Characterize
PROGRESSION	given as INP	JT student will take ACTION	resulting in OUTPUT	MODE
Diagrams + 1st Recognition items	(a) Elements in "slope" compu- tion (plus answer option (d) Conditions for +, or zero slopes)	in ratio that	(c) Correct values for computing slope (f) Correct identification	i verbal/symbolic i ii environmental ii iiii audio iii
Without diagrams 2nd	i.e., recogi	Repeat of above, ition practice but with	out diagrams	iv non-realistic iv v transient v ACTIONS
Editing 3rd	(a) Lines correctly or incorrectly identified for sign of slope (b) Problem model new problems		(c) Change in sign identification (f) Correct slopes	vi perceptual vii motor viii vocal ix subvocal

Select Media

NPUT/OUTPUT DISPLAY

	nt bal torial	s.1 peo	rronmental ple (behavior ects nts	t.2 slide	ces , TV s, projectors lator o-tape	
	i verbal/	symbolic	ii e	nvironmental		
NPUTS >	iii	1 1 ""		vise	visual	
Y	audio	visual	audio	v. transient	non·v.	
realistic	s.1		s.2 s.3	s.3	s.1 s.2	
FRIC	t,4	r.1 (7.2) t.1 t.2 t.3	t.4	t.1 t.3	t.2 t.3	

performance	e accomm	odation	record capabilities				
t.3 simulator s.2 objects, equipment (manipulanda)			u. t.1 t.4	t.1 film, TV			
OUTPUTS i verbal/symbolic		ii environmental					
ACTIONS	iii	iv	iii	iv	٧	non·v.	
vi & ix	t.4	u		z z	-		
vii		0	1.4	U	t.1	s.2 t.3	
viii	t.4						

No suggested program is provided.

The empirical tryout of your own
program provides you with the valuable type of feedback you need.



FINAL EXERCISE #4 DEVELOPING TESTS

NOT TO BE PERFORMED UNTIL ALL WORKBOOK EXERCISES ASSOCIATED WITH HANDBOOK SECTION "F" HAVE BEEN COMPLETED.



FINAL EXERCISE #4: Developing Tests

Before doing this exercise, you should have completed the following tasks:

- (1) Read HANDBOOK Section "F": DEVELOP DIAGNOSTIC AND EVALUATIVE TESTS
- (2) Do the WORKBOOK exercises associated with Section "F."

Your assignment in this exercise is to perform TASK F: "developing criterion tests." As a basis for performing this task, starting on the next page you will be given completed results for prior tasks in the materials development process.

Following your review of these results, you are to develop your own tests using the FORMS which appear in the section which begins on page 4.9.



Before doing the "test development" assignment, review the completed FORMS which contain the results of PR!OR DEVELOPMENT TASKS.

RESULTS OF PRIOR DEVELOPMENT TASKS WHICH ARE MADE AVAILABLE TO YOU

TASK LABEL	TASK TITLE	FORM NO.
В	Task analysis, learning analysis, competency analysis, and mode analysis	A.5(4)
D	Statement of objectives	D.2(1) and D.2(2)
E	Simulation plans	E.1(1)



Form A-5 (4)		
for TASK STEP	Sub-STEP	a. TASK DESCRIPTION
INPUT	ACTION	OUTPUT
Desirable and undesirable student behavior in classroom	(Teacher) uses appropriate "reinforcement" technique	Increase of desirable student behavior and decrease of undesirable behavior
•	b. TASK ANALYSIS	
Short durations of attention or work		
	Provides reinforcement only for improvements (verbal, physical, use of tokens, etc.)	Shaping of increasingly longer/better behavior
Range of approximations to desirable behavior		
Participating in group activities		·
	Provides reinforcement for each occasion (verbal, physical, use of tokens, etc.)	Strengthening existing behavior
Any full-fledged desirable behavior - which occurs too infrequently		
Hyperactivity		
Fighting	Ignores	Extinction of undesirable behavior
Any undesirable behavior maintained by attention		^
ERIC ————————————————————————————————————		
 _	4.4	

COMPETE ANALYSIS		c. LEARNING ANALYSIS					d. MC	DDE ANAL	_YSIS	
		level of difficulty in acqui								
		DI	SCRI	TANIN	IONS			symbotic	verbal	environmental
		between full-	hi	med	10					
		bledged desirablesimilarity		X			realistic	!		x
		and approximations No. of properties			х	VISUAL		! 		
				\vdash						
INPUT		No. of inputs			X	İ	reproduced/ fabricated			1
		GEI	NERA	LIZAT	TIONS					+
			hi	med	lo		realistic			
		dissimilarity	Х		1	AUDIO	1		X	
recall		No. of properties				100.0	reproduced/			
	46				<u>×</u>		fabricated			
transfer	Ø,	No. of inputs	X	<u> </u>		OTHER:	Kinaesthetic,	smell, taste		
			ASS	OCIA	TIONS				_	
		due to ▽	,	n med	1 10		perceptual	motor	vocal	sub/vocal
	1	No. of association	ons			1				
		rassociative strength of other action Lendency to punish for	ons 2	<u> </u>		recognitio	n			
		undesirable behaviors GEI	NERA	LIZA	TIONS		·}	 	╂	+
ACTIO	N/	and to ignore desirable		hi mei		editing		}	1]]
CHAIN		behav- integrative strength of acti	on		X	}				
				CHA	NS	ļ				
				hi mec	$\overline{}$	production	on	X	X	
recal!		length of cha	''''	-∤	X		L	L		
recan		output discrimination, problei	ns _		$\downarrow \downarrow$					
transfer	80	associative strength of other action	ns							
 _		DI	SCRI	MINA	TIONS					
		due to ▽	_hi	med	lo	ļ		symbolic	verbal	environmer
		sımilarity		X				ŀ		,
		No. of properties	\vdash	\vdash	\vdash		realistic	ł	l	X
			<u> </u>	 	 	VISUAL				1
	_	No. of inputs	l			ĺ	reproduced/ fabricated			
OUTPU	· 1	GE	NERA	LIZA	TIONS			├──	 	+
			hi	med	ľo	1	realistic	1	,	
		dissimilarity		×		AUDIO	i cansii Ç		X	
	_	No. of properties		\dagger						
recall		No. or properties	<u> </u>	1	}	}	reproduced/ fabricated	1		1 1
transfer	Ø	No. of inputs				OTHER:	Kinaesthetic,	smell, taste	<u></u>	



LESSON SPECIFICATION OF OBJECTIVES GIVEN STUDENT WILL RESULTING IN Criterion Inputs Criterion Actions Criterion Outputs mode: visual/verbal/etc. mode: recognition, editing, production mode: visual/verbal/etc. number of examples from class alternatives: new and/or old examples elimits, standards new and/or old examples mode: perceptual/motor/vocal/sub-vocal quantitative: amount /degree/time limits typical/atypical conditions Qualitative availability of performance aids CRITERION Any example of student Teacher will apply the Changes in student behavior (desirable or appropriate technique behavior: undesirable) occurring (shaping, reinforcing, -Increased strength or in an actual classroom; or ignoring): 1. frequency of desirable behavior can be verbal -In a correct way behavior or physical -For correct durations -Decreased frequency of (over time) undesirable behavior PREPARATORY (SUB-CRITERION) A verbal description of Teacher will verbally Correct verbal discussion of problem and ways problem behaviors identify properties or attributes that call for of dealing with it 2. a particular managemeni strategy; will describe the details of carrying out the strategy (conditions) 3.



LE 33					FOR STUDENTS
	GIVEN		YOU WILL		YOU MUST LEARN TO
	Inputs]	Actions	}	distinguish between
	 objects, people, events, words, symbols, etc. 		• select, edit, or produce		examples from # input classes on the basis of
	• their properties		type of action e.g., point to, label, write,		# properties • see similarity
	● examples: _ number	A	classify, etc.	4	among examples within each of the # input classes
	new or old		RESULTING IN Outputs	4	on the basis of # properties
	availability of performance aids		objects, events, words, symbols, etc.	4	e associate one of # actions with each one of the # actions
	typical/atypical conditions problem format		etc. • their properties (quantity/quality)		# input classes ● exhibit # alternative
	e.g., single input vs. multiple choice		 standards of acceptability 		exhibit the series of actions actions associations in the chain
1		J (
1.	CRITERION Any example of student behavior (desirable or undesirable) occurring in an actual classroom; behavior can be verbal or physical		Teacher will apply the appropriate technique (shaping, reinforcing, or ignoring): -In a correct way -For correct durations (over time)		To distinguish between three types of problem behavior; the distinction is based first of all on: (a) whether it is desirable behavior or undesirable behavior; (b) how frequently it occurs; (c) if desirable, whether it is at full strength or
2.	PREPARATORY (SUB-CRITERION) A verbal description of problem behaviors		Teacher will verbally identify properties or attributes that call for a particular management strategy; will describe the details of carrying out the strategy (conditions)		Then you will have to learn to apply a different technique for each of the three types of problems
3.					



LESSON	OBJECTIVE	SIMULATION DECISIONS
a. assessing simulation needs	due to	
	CONSIDERATIONS cost danger N A	INSTRUCTIONAL CONSIDERATIONS sampling standardization manipulation A A SIMULATION PLANS: visual, audio, etc. -Verbal descriptions -Filmed examples -Role-playing (actual students, or fellow teacher trainees) -Actual classroom
other ACTION types perceptual motor vocal sub-vocal	Verballu or physically delivers reinforcement	-Paper and pencil -Oral responses -Acting out (in role-play situation)
people man made objects natural objects events words symbols	Changes in student behavior: ••Frequency ••Approximation to ideal	-Verbal feedback -Rolz-play feedback -Actual feedback (student behavior)

other

YOUR ASSIGNMENT

Based on the materials you have just reviewed, develop your own tests:

- (1) Fill in the test development FORMS which appear on the next several pages (using as many of them as you feel you need);
- (2) Formulate an instructional strategy (basing it on all completed results). Fill in the instructional strategy FORM.
- (3) (OPTIONAL) As time permits, carry out the remaining TASKS in the instructional materials development process (i.e., develop a program, administer it and the tests you have developed, and revise the program in the light of tryout results).

YOUR PRODUCTS WILL INCLUDE: *

-- completed FORMS F.2(1): Tests

--completed FORM G.1(2): Instructional Strategy

CONTENTS IN THIS SECTION

FORM NO.	TITLE	PAGE
F.2(1)	Test development	4.10-4.13
G.1(2)	Plan instructional strategies	4.14-4.15



^{*}the minimum requirement

LESSON	OBJECTIVE FORM FOR TEST DEVELOPMENT
"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT
-Instructions -Question or Problem -INPUTS (new/old)	
(when applicable)	
•• ANSWE R OPTIONS (when applicable)	
"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO
- ACTIONS (new/old) •• mode	
"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT
- OUTPUT •• answers •• product - Type of Scoring itandards	

LESSON	OBJECTIVE FORM FOR TEST DEVELOPMENT							
"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT							
Instructions Question or ProblemINPUTS								
(new/old) ••AIDS (when applicable)								
••ANSWER OPTIONS (when applicable)								
·								
"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO							
← ACTIONS (new/old) •• mode								
·								
	e							
"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT							
- OUTPUT answers product Type of Scoring Ondards DIC Scoring								

LESSON		OBJECTIVE			FORM FOR TEST	DEVELOPMENT
"GIVEN"		INFORMA	TION YOU PLA	N TO GIVE	TO STUDENT	
- Instructions - Question or ProblemINPUTS (new/old)					·	
••AIDS (when applicable) ••ANSWER						
OPTIONS (when applicable)	<i>9</i>					
						
"STUDENT WILL"		WHA	THE STUDEN	T IS EXPECT	ED TO DO	
- ACTIONS (new/old) •• mode						
			·	·	· · · · · · · · · · · · · · · · · · ·	
"RESULTING IN"		WHAT T	HE STUDENT IS	EXPECTED	TO TURN OUT	
- OUTPUT ••answers ••product - Type of Scoring Standards for Scoring						

4.12

LESSON	OBJECTIVE FORM FOR TEST DEVE	ELOPMENT
"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT	
Instructions Question or Problem		
••INPUTS (new/old) ••AIDS		
(when applicable)		
••ANSWER OPTIONS (when applicable)		٠
"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO	_
- ACTIONS (new/old)		
·	•	
		κ,
"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT	
- OUTPUT - • answers		_
Type of Scoring		
Scoring Scoring		

		1	
LESSON	į į	CRITERION BEHAVIOR	i

IA. Characterize Criterion Practice Requirements

PERFORMANCE	LEARNING PROBLEMS	PROBLEM SOURCE	MODE
simulation aids available two directions transfer delayed basis recognition mode	INPUTS 3 discriminations 4 generalizations INPUTS & ACTIONS 5 associations 6 chains ACTIONS 7 generalizations partial proficiency	INPUTS A similarity (dis-) B No. of properties C No. of classes	INPUTS OUTPUT i verbal/symbolic i ii environmental ii iii audio iii iv non-realistic iv transient v ACTIONS vi perceptual viii vocal vii motor ix sub-voca

IIA. Select Preparatory Practice Progression(s)

	UNIT SIZE			Мо	DE	PROMP	TING/FADING		CONTENT	-		ENCY or ATION
in:	ing gradual in quantity quality	creases	c. d.	R/E/P visual/verba concrete/ab procedures/	stract	g. verbal cu		ins i. k. i. m. n.	principles/pro altered criterio criterion errors/criterio editing/criteri backward chai	on/ on on	o. repetition P. review Q. varied-exa	
		2		Α	В	С	D	E	F	<i>i</i>	vi	vii
1	q _	a∙p		9	9				g·i	e	ħ	i
3	b-q	i-o-	ρ	g-h-k	i-g	i					h	
4	b-q	i·o-	p	g-h	i-g	í-g				9	h	i
3+4	b-i-q	i.o.	p	g∙h	i∙g	i-g				c-d-e-∤		Ţ
5	b-o	i-0-	р			i-g-o-p	b-g-I					
6	a-f-m-n	0-r	,					a∙n				a-m-n
7	i	0.5							g-h-j			j

III. Plan Behavior Control

PROMPT • OBSERVATION • ATTENTION	PROVIDE FEEDBACK	REINFORCE PRACTICE	PROVIDE DELAYED REINFORCEMENT
Advance Organizers statement of objectives instructions	Correctness of Answers (Solutions)standard available for comparisondiscrimination practice re: correct outputs	Intrinsic Reinforcers interesting materials Extrinsic Reinforcers	Extrinsic Reinforcerssocialmonetaryactivities
Cuesvisual or verbalformats, diagramschecklists		social monetary activities grades	
RIC			

4.14

В.	Design	Criterion	Practice
----	--------	-----------	----------

	GIVEN as	INPUT	STUDENT WILL	take ACTION	RESULTING IN	ОИТРИТ
			•			
EXAMPLE(S)		i		•		
properties of additional examples						
					· -	

¹IB. Design Preparatory Practice Progression

IIC. Characterize

	Tactice i	. 0 3. 0 0 0	, — — —				TIC. Character	126
PROGRESSION	given as	INPUT	student will	take ACTION	resulting in	OUTPUT	MODE	
1st							INPUTS OUTPU i verbal/symbolic ii environmental iii audio	
² 2nd								ν ν
3rd			_				vii perceptual viii motor viiii vocal ix subvocal	

Select Media

INPL	JT/OUTPUT	DISPLAY			
r. r.1 r.2	print verbal pictorial	s. s.1 s.2 s.3	environmental people (behavior) objects events	t. t.1 t.2 t.3 t.4	devices film, TV slides, projectors simulator audio-tape

	i verbal/symbolic		ii environmental			
NPUTS >	iii		111	VISU	visual	
Y	audio	vi\$ua1	audio	v. transient	non-v.	
realistic	s,1		s.2 s.3	s.3	s. 1 s. 2	
'ERIC	t.4	r.1 r.2 t.1 t.2 t.3	t.4	t.1 t.3	t,2 t.3	

ACTION CAPABILITY / RECOF	RD CAPABILITY
performance accommodation	record capabilities

t.3 simulator U. paper and pencil s.2 objects, equipment t.1 film, TV (manipulanda) t.4 audio tape

OUTPUTS i verbal/symbolic		ii environmental				
ACTIONS	iii	iv	iii	iv	v	non∙v.
vi & ix	t.4	u		U		
vii		U	t.4	u	t.1	s.2 t.3

4.15/4.16

DO NOT TURN PAGE UNTIL YOU HAVE COMPLETED THE FORMS ON PAGES 4.10-4.15

AFTER you have developed your own tests and have formulated an instructional strategy, refer to the suggested solutions which appear on the next several pages.



"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT
— Instructions — Question or	Case Study: "Never waiting to be called on, Johnny always blurts out answers
Problem ••INPUTS (new/old) ••AIDS (when applicable)	questions. Mrs. Jones then usually asks others if Johnny's answers are right or wrong. Or, she may herself tell Johnny whether he is right or wrong."
•• ANSWE R OPTIONS {when applicable}	What should Mrs. Jones do to get Johnny to stop blurting out answers and to raise his hand to be called on?

(Other comparable items - four in number)

"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO
- ACTIONS (new/old) •• mode	Write a comparable answer: "Mrs. Jones should ignore Johnny when he blurts out answers and call on someone else. When he does raise his hand, she should call on him sometimes."

"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT
- OUTPUT	See above for autum
• • answers	See above for answer
••product	
-Type of Scoring	
itandards RIC or Scoring	•

LESSON	OBJECTIVE	FORM FOR TEST DEVELOPMENT

"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT
- Instructions - Question or Problem INPUTS (new/old) ALDS (when applicable) ANSWER OPTIONS (when applicable)	Case Study: "Only on occasion does Sally volunteer to participate in group activities. Her teacher would like her to do this more often." What should her teacher do to bring this about?

(Other comparable items - four in number)

"STUOENT WILL"	WHAT THE STUDENT IS EXPECTED TO OO
— ACT ONS (new/old)mode	Written answer: "The teacher should reinforce (a reinforcer appropriate to Sally) each instance in which Sally does volunteer."

"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT
- OUTPUT	
• • answers	See above for answer.
• • product	
-Type of Scoring	
- Standards for Scoring	



LESSON	OBJECTIVE	<u> </u>	FORM FOR TEST DEVELOPMENT
LESSON	 OBJECTIVE		FUHM FUH TEST DEVELUPMENT

"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT
- Instructions - Question or Problem - INPUTS (new/old) - AIDS (when applicable)	Case Study: "Clara will concentrate on an assignment for no more than a minute or two at a time. Her teacher would like to get her to work for a whole class period." What should her teacher do?
•• ANSWER OPTIONS (when applicable)	

(Other comparable items - four in number)

"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO
ACTIONS (new/old) •• mode	Written answer: "Make a contract with Clara for gradually longer and longer durations. Come to agreement with her about a reinforcement and deliver the reinforcement only if contract terms are met."

"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT
- ООТРОТ	
• • answers	See above for answer.
• • Product	
Type of Scoring	•
- Standards for Scoring	



Form		

	 1	
LESSON	CRITERION BEHAVIOR	

IA. Characterize Criterion Practice Requirements

F	PERFORMANCE	LEARNING PROBLEMS	PROBLEM SOURCE	MODE
	simulation aids available two directions	discriminations deneralizations INPUTS & ACTIONS	INPUTS A similarity (dis-) B No. of properties C No. of classes (or. No. members/class)	INPUTS OUTPUTS verbal/symbolic ii environmental iii audio iii
	transfer defayed basis	associations 6 chains ACTIONS	INPUTS & ACTIONS existing associations length of chain	non-realistic IV
	recognition mode	7 generalizations partial proficiency	ACTIONS F integrative strength	ACTIONS VI perceptual (VIII) vocat VII motor IX sub-vocal

IIA. Select Preparatory Practice Progression(s)

	UNIT SIZE			МО	DE	PROMPT	PROMPTING/FADING		CONTENT			FREQUENCY or VARIATION	
a. shap in	guantity guality	creases	c d.	R/E/P visual/verpal concrete/abs procedures/j	stract	g. verbal cue	g. verbal cues k. altered crit criterio h, visual cues l. errors/crite m. editing/crit		principles/pro attered criterio criterion errors/criterio editing/criterio backward chai	on/ n on	o. repetition p. review q. varied examples		
		2		А	В	С	D	Γ	E	F	1	vi	vii
1	a	о-р		g	g					g·j	е	h	j
3	b-q •	1-0-p		g-h-k	1-g	1						h	
4	b∙q	ιο·p		g⊦h	ı-g	ı·g					g	h	j
3+4	(b·i·d)	1-O-p		(g·h	1.9	ı-g					c-d-e-i		
5	6	t-0-p				1-g-o-p	(b·g·l)						<u> </u>
6	a-f-m-n	0.0						а	-n				a-m-n
7	j	о.р								g-h-j			i

III. Plan Behavior Control

PROMPT • OBSERVATION • ATTENTION	PROVIDE FEEDBACK	REINFORCE PRACTICE	PROVIDE DELAYED REINFORCEMENT
Advance Organizersstatement of objectivesinstructions Cuesvisual or verbalformats, diagramschecklists	Correctness of Answers (Solutions) Standard available for Combarison discrimination practice res correct outputs	Intrinsic Reinforcers interesting materials Extrinsic Reinforcers social monetary activities grades	Extrinsic Reinforcers social monetary activities Reinforcements for teachers to get them to use "reinforcement" with their students

ERIC

Full Text Provided by ERIC

IB. Design Criterion Practice

	GIVEN as	INPUT	STUDENT WILL	take ACTION	RESULTING IN	ОИТРИТ
EXAMPLE(S) properties of additional examples	Problem behavio in an actual cludich requires: reinforcement, ing; e.g., inat ness, talking t (infrequently), huperactivity	assroom shaping, or ignor- tentive o peers	Teachers will appropriate s	take Leps	Changes in the to	oehavior ts

IIB. Design Preparatory Practice Progression

HC Characterize

PROGRESSION	given as	INPUT	student will	take ACTION	resulting in	OUTPUT		MODE	
1st	Paper-and-pe case studies nition level criminating types of pro	s; recog- l; dis- betveen		om options fication of ypes	Correct ide	entifica-	INPU	TS verbal/symbolic environmental audio	OUTPUTS c
2nd	Case studies problems of the three ty	each of		hniques for	Description appropriate mentation	e imple-	/v v	non-realistic transient ACTIONS	v
3rd	Instructions guided class exercise - e of problem se selected	room example	Manage se problem fo of week	lected or period	Record of r changes in behavior ar of what tec	student's rd record		perceptual motor vocal subvocal	

IV. Select Media

INPUT/OUTPUT DISPLAY								
r. prin r.1 verb r.2 picto	-	s.1 peo	s.1 people (behavior) t.1 film, TV slides, projec s.2 objects t.3 simulator					
	i verbal/symbolic // environmental							
INPUTS >	iii audio		""	visual				
Ψ	audio	visual	audio	v transient.	non-v.			
realistic	s. 1		s 2 s 3	s 3	s.1 s.2			
iv non- realistic	14	r.1 r 2 t.1 t.2 t.3	t.4	t,1 t.3	t.2 t.3			

performance	ce accomme	odation	rec	ord capab	ilities	
t.3 simi s.2 ob (n	u. paper and pencil t.1 film, TV t.4 audio tape					
оитритѕ►	i verbal	/symbolic		nmental		
ACTIONS	111	IV	in	iv	v	non-v
vi & ix	t 4	U		U		
vii		(t.4	U	1.1	s.2 1.3
viii	t.4					



FINAL EXERCISE #5 PLANNING SIMULATION

NOT TO BE PERFORMED UNTIL ALL WORKBOOK EXERCISES ASSOCIATED WITH HANDBOOK SECTION "E" HAVE BEEN COMPLETED.



التستار

FINAL EXERCISE #5: Planning Simulation

Before doing this exercise, you should have completed the following tasks:

(1) Read HANDBOOK Section "E": PLAN SIMULATION

and

(2) Do the WORKBOOK exercises associated with Section "E."

Your assignment in this exercise is to perform TASK E: "assessing simulation needs and planning simulation". As a basis for performing this task, starting on the next page you will be given completed results for prior tasks in the materials development process:

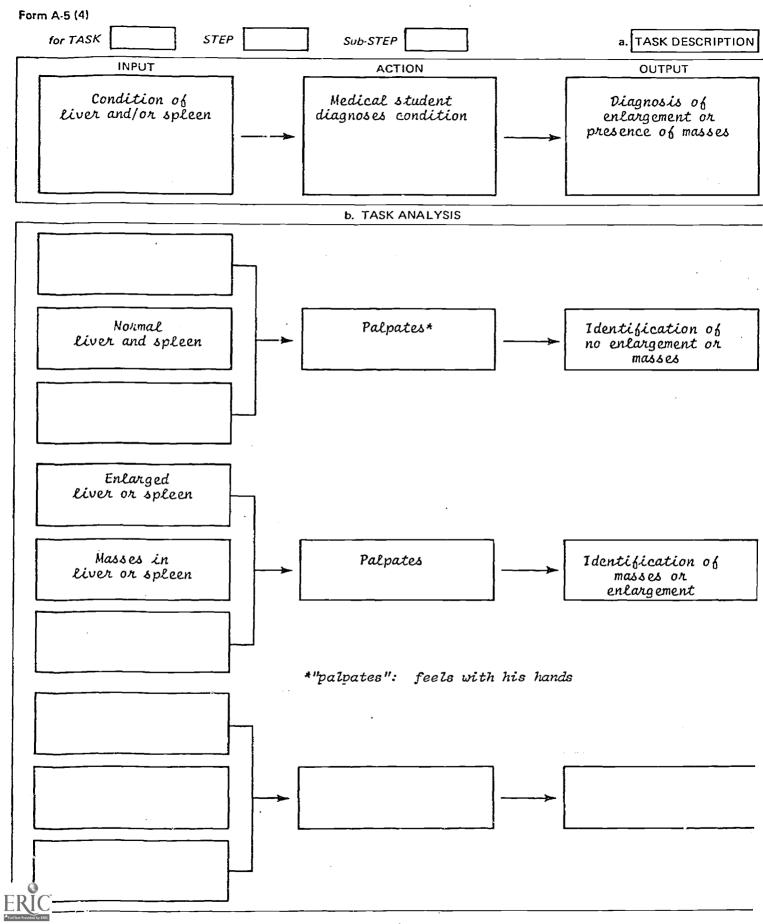
Following your review of these results, you are to develop your simulation plans using the FORM which appears in the section beginning on page 5.9.

Before doing the ${}^{\rm CH}$ simulation" assignment, review the completed FORMS which contain the results of PRIOR DEVELOPMENT TASKS.

RESULTS OF PRIOR DEVELOPMENT TASKS WHICH ARE MADE AVAILABLE TO YOU

TASK LABEL	TASK TITLE	FORM NO.
В	Task analysis, learning analysis, competency analysis, and mode analysis	A.5(4)
D	Statement of objectives	D.2(1) and D.2(2)





COMPETE ANALYSIS		c. LEARNING ANALYS	ıs				d. MC	DE ANAL	_YSIS	
	-	level of difficulty in acqui								
		DI	SCRI	MINA.	TIONS			symbolic	sees do al	environmental
		due ro ▽	hi	med	lo			symbolic	verbal	Tinvironmental
		similarity		X			realistic			x
		No. of properties			X	VISUAL	İ			+
INPUT		No. of inputs			x		groduced/ labricated			
•		GEI	NER#	ALIZA	TIONS	ļ ———				
			hi	med	lo .		realistic			
		dissimilarity		X		AUDIO			ļ	
recall		No. of properties			X	İ	eproduced/ fabricated			
transfer		No. of inputs		X		OTHER (K	inaesthetic	smell, taste		
			ASS	SOCIA	TIONS					
		etan ia V	,_	hi me	d to		perceptoal	mator	vocal	sub-vocat
		No. of association	ns		X				Ţ	\top
		associative strength of other action	ns L			recognition			Ì	
•		GEI	NE RA	AL:ZA	TIONS				 	
ACTIOI CHAIN	V /		_	1	···	editing				
CHAIN		integrative strength of acti	on							
				СНА	INS				1	
		tannet at h		to me	X	production	X	X	ļ	
recall		length of cha	_ ⊢	-	+		L	touch		
		output discrimination problem	_ ├	_	-			wuen		
transfer		associative strength of other action	ns							
			SCR	IMINA	TIONS					
		dae to	hi	med	10			symbolic	verbal	environmental
		similarity		}			realistic		ļ	
		No. of properties				VISUAL				
		No. of inputs		+	+-1	1	eproduced/			
OUTPU	т	wo. or inputs	<u></u>		لــــــــــــــــــــــــــــــــــــــ		fabricated	[ſ	
		GE			TIONS			i		+
			hi	med	l lo		realistic			
		dissimilarity	<u></u>	1		AUDIO		<u> </u>		
recall		No. of properties] .	eproduced"	}		
transfer		No of inputs		1			labricated	<u></u>		
(10:1316)	_		<u></u>	<u> </u>	لــــــــــــــــــــــــــــــــــــــ	OTHER (K	maesthetic,	smell, taste		





LESSON

	GIVEN		STUDENT WILL		RESULTING IN
	Criterion Inputs		Criterian Actions		Criterion Outputs
	• mode: visual/verbal/etc.		mode: recognition, editing, production		•mode: visual/verbal/etc.
	• number of examples from class		alternatives: new and/or old examples		●limits, standards
	• new and/or old examples	V	mode: perceptual/motor/vocal/sub-vocal	1	• quantitative: amount /degree/time limits
	• typical/atypical conditions		·	•	• qualitative
	• availability of performance aids				
		•		•	
	CRITERION BEHAVIOR				
١.	Given an enlarged or normal liver or spleen - or liver or spleen with masses in it		Will palpate and identify condition		Identification of presence or absence of enlargement or masses
)		, J	
					2
.					
		•		-	
					*.
	{	ł		1	
	}		·		
)		
]		J	L

LESSON FOR STUDENTS YOU WILL YOU MUST LEARN TO **GIVEN** Inputs Actions e distinguish between examples from # input classes objects, people, events, • select, edit, or produce words, symbols, etc. on the basis of properties type of action their properties e.g., point to, lebel, write, see similarity classify, etc. among examples exemples within each of the input classes number RESULTING IN new or old on the basis of properties Outputs availability of performance sids e associate one of objects, events, words, symbols, actions with each one of the # input classes typical/atypical conditions e exhibit elternative their properties (quantity/quelity) problem formst actions e.g., single input vs. multiple exhibit the series of standards of acceptability choice associations in the chain CRITERION BEHAVIOR Will palpate and Given an enlarged or Identification of normal liver or spleen identify condition presence or absence of or liver or spleen with enlargement or masses masses in it 2. 3.

STATEMENT OF OBJECTIVES



YOUR ASSIGNMENT

Based on the materials you have just reviewed, assess simulation needs and plan it (if necessary).

- (1) Fill in the simulation FORM which appears on the next page.
- (2) Develop criterion tests (using the test development FORM which also appears in this section).
- (3) (OPTIONAL) As time permits carry out the remaining TASKS in the development process (all the way through to the tryout and review of an instructional program).

YOUR PRODUCTS WILL INCLUDE:*

--completed FORM E.1(1): Simulation plans

-- completed FORM F.2(1): Tests

CONTENTS IN THIS SECTION

FORM NO.	TITLE	PAGE
E.1(1)	Simulation decisions	5.10
F.2(1)	Test development	5.11-5.12



^{*} as a minimum requirement.

LESSON	OBJECTIVE FORM FOR TEST DEVELOPMENT
"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT
-Instructions -Question or Problem -INPUTS (new/old) -AIDS (when applicable)	
•• ANSWER OPTIONS (when applicable)	
"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO
ACTIONS (new/old)	
"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT
OUTPUT Output Output Type of Scoring dards	

LESSON	OBJECTIVE FORM FOR TEST DEVELOPMENT
"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT
-Instructions	
-Question or Problem	
••INPUTS (new/old)	
••AIDS (when applicable)	
•• ANSWER OPTIONS (when applicable)	
"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO
- ACTIONS (new/old)	
•• mode	
·	
·	
"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT
- OUTPUT •• answers •• product - Type of Scoring Standards	

DO NOT TURN PAGE UNTIL
YOU HAVE COMPLETED
FILLING OUT THE FORMS
ON THE PRECEDING PAGES.



LESS	ON	OBJECTIVE	SIMULATION DECISIONS
a. a	ssessing simulation need	ds due to	
	LOGISTICA	L CONSIDERATIONS	INSTRUCTIONAL CONSIDERATIONS
	downtime N	Cost danger N A	sampling standardization manipulation A A A
b. p	lanning simulation whe	en needed	-It would take a long time to run into range of practice situations
_	INPUT types	PROPERTIES: physical, psychologica	SIMULATION PLANS: visual, audio, etc.
	people	-Enlargement	-Verbal descriptions
	man made objects	-Presence of masses	-Rubberized mock-ups (with Varying degrees of enlargement or absence of
		 	it built into dummies) (masses)
	events	1	-Paid actors (for <u>normal</u> conditions)
	words		
	symbols		
	other		
	ACTION types		
	perceptual	-Applying <u>deep</u> pressure	
	motor		
	vocal		
	sub-vocal		·
_	OUTPUT types		
	peo p le	-Diagnosis or evaluation	
	man made objects		
	natural objects		
	events		
	words		
	symbols		
	other		



		1		1
LESSON	ĺ	O8JECTIVE		FORM FOR TEST DEVELOPMENT

"GIVEN"	INFORMATION YOU PLAN TO GIVE TO STUDENT
- Instructions - Question or ProblemINPUTS (ne v'old)AIDS (when applicable)	Use rubberized mock-ups - in testing situation -Use a <u>range</u> of test situations including <u>near</u> normal conditions (which are nevertheless symptomatic or pathology)
••ANSWER OPTIONS (when applicable)	

"STUDENT WILL"	WHAT THE STUDENT IS EXPECTED TO DO
— ACTIONS (new/old) •• made	Palpate and correctly evaluate condition

"RESULTING IN"	WHAT THE STUDENT IS EXPECTED TO TURN OUT
- OUTPU T	
• • answers	Correct evaluations
••product	
-Type of Scoring	•
- Standards for Scoring	



FINAL EXERCISE #6 STATING OBJECTIVES

NOT TO BE PERFORMED UNTIL ALL WORKBOOK EXERCISES ASSOCIATED WITH HANDBOOK SECTION "D" HAVE BEEN COMPLETED.



FINAL EXERCISE #6: Stating Objectives

Before doing this exercise, you should have completed the following tasks:

- (1) Read HANDBOOK Section "D": STATE CRITERION AND PREPARATORY OBJECTIVES
 and
- (2) Do the WORKBOOK exercises associated with Section "D."

Your assignment in this exercise is to perform TASK D: "stating objectives". As a basis for performing this task, starting on the next page you will be given completed results for prior tasks in the materials development process.

Following your review of these results, you are to develop your own statement of objectives using the FORMS which appear in the section beginning on page 6.7.

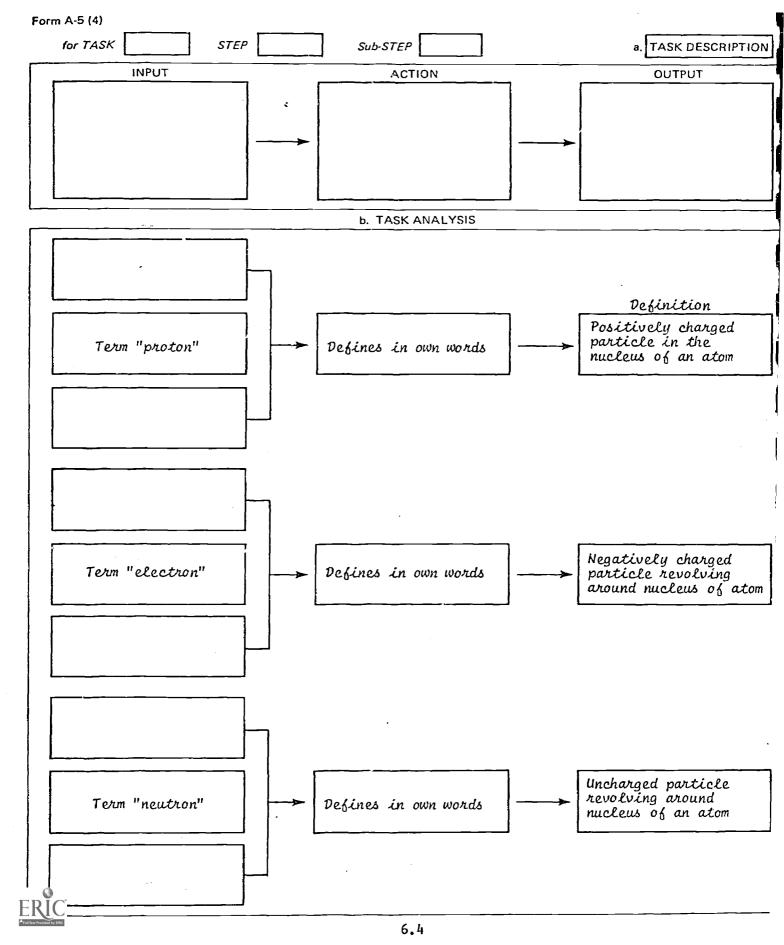


Before doing the "objectives" assignment, review the completed FORMS which contain the results of PRIOR DEVELOPMENT TASKS.

RESULTS OF PRIOR DEVELOPMENT TASKS WHICH ARE MADE AVAILABLE TO YOU

TASK LABEL	TASK TITLE	FORM NO.
В	Task analysis, learning analysis, competency analysis, and mode analysis	A.5(4)





Ievel of difficulty in acquiring DISCRIMINATIONS due to hi med lo similarity X No. of properties X No. of inputs Y reproduced/	environmental
symbolic verbal x x visual x x visual x x visual x x visual x x x x x x x x x x x x x x x x x x x	environmental
similarity No. of properties X VISUAL	environmental
similarity X realistic X No. of properties X VISUAL	
No. of properties X VISUAL	
No of inques	
(NPUT No. of inputs X reproduced/ fabricated	
GENERALIZATIONS	
hi med lo realistic	
dissimilarity X AUDIO	
recall X No. of properties X reproduced/	
transfer No. of inputs X OTHER: Kinaesthetic, smell, taste	
ASSOCIATIONS	
due to hi med to perceptual motor voc	al sub/vocal
No. of associations X	
associative strength of other actions recognition	
ACTION/ GENERALIZATIONS	
CHAIN integrative strength of action X editing	
CHAINS	
hi meil lo production X	.
verbal chain length of chain X	
output discrimination problems writing	
transfer 🖄 associative strength of other actions	,
DISCRIMINATIONS	
due to hi med la symbolic verba	al environmental
similarity X realistic X	
No. of properties X VISUAL	
No. of inputs X reproduced/ tabricated	
OUTPUT GENERALIZATIONS	
hi med lo realistic	
dissimilarity AUDIO	
recall No. of properties reproduced/ labricated	
transfer OTHER: Kinaesthetic, smell, taste	



YOUR ASSIGNMENT

Based on the materials you have just reviewed, <u>develop your own statement</u> of objectives:

- (1) Fill in the "objectives" FORMS which appear on the next two pages.
- (2) Make simulation plans (using FORM E.1(1) which is provided on page 6.11).
- (3) (OPTIONAL) As time permits, carry out the remaining procedures in the development process.

YOUR PRODUCTS WILL INCLUDE: *

--completed FORMS D.1(1) and D.2(2): Objectives

--completed FORM E.1(1): Simulation plans

*as a minimum requirement

CONTENTS IN THIS SECTION

FORM NO.	TITLE	PAGE
D.1(1)	Specification of objectives	6.8
D.2(2)	Statement of objectives for students	6.9
E.1(1)	Simulation decisions	6.11



550	<u> </u>			_	SPECIFICATION OF OBJECT
	GIVEN		STUDENT WILL		RESULTING IN
Γ	Criterion Inputs]	Criterion Actions		Criterion Outputs
	• mode: visual/verbal/etc.		• mode: recognition, editing, production		• mode: visual/verbal/etc.
	• number of examples from class	A	alternatives: new and/or old examples	N	a limits, standards
	• new and/or old examples	1	• mode: perceptual/motor/vocal/sub-vocal		quantitative: amount /degree/time limits
	• typical/atypical conditions		1	Y	• qualitative
	availability of performance aids				
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LESS	CON [STATEMENT OF OBJECTIVE
					FOR STUDENTS
	GIVEN		YOU WILL		YOU MUST LEARN TO
ł	Inputs		Actions	j	distinguish between
Í	objects, people, events,		select, edit, or produce	1	examples from # input classes
	words, symbols, etc.			J	on the basis of
	• their properties		 type of action e.g., point to, label, write, 	- 1	# properties
	- man properties		classify, etc.	J	see similarity among examples
- 1	examples;number	A			within each of the # input classes
	new or old		RESULTING IN	4	on the basis of
- 1			Outputs	4	# properties
	 availability of performance aids]	objects, events, words, symbols,	4	essociate one of with each one of the detailed
	 typical/atypical conditions 		etc.	ı	# input classes
	 problem format 		 their properties (quantity/quality) 		e exhibit # alternative
	e.g., single input vs. multiple				exhibit the series of
	choice		standards of acceptability		associations in the chain
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LESSON	OBJECTIVE	SIMULATION DECISIONS							
a. assessing simulation needs due to									
LOGISTICAL	CONSIDERATIONS	INSTRUCTIONAL CONSIDERATIONS							
downtime	cost danger	sampling standardization manipulation							
b. planning simulation when n	b. planning simulation when needed								
INPUT types	PROPERTIES: physical, psychological	SIMULATION PLANS: visual, audio, etc.							
people									
man made objects									
natural objects									
events									
words									
symbols	•								
other									
ACTION types									
perceptual									
motor									
vocal									
sub-vocal									
OUTPUT types									
people									
man made objects									
natural objects									
events									
words									
symbols									
other									

6.11/6.12

DO NOT TURN PAGE UNTIL
AFTER YOU HAVE COMPLETED
FILLING OUT THE FORMS
ON THE PREVIOUS PAGES.



	GIVEN		STUDENT WILL		RESULTING IN
i	Criterian Inputs		Criterion Actions	ì	Criterion Outputs
	• mode: visual/verbal/etc.		• mode: recognition, editing, production		e mode: visual/verbal/etc.
	• number of examples from class	A	alternatives: new and/or old examples	A	●limits, Standards
	• new and/or old examples		• mode: perceptual/motor/vocal/sub-vocal		• quantitative: amount /degree/time limits
	• typical/atypical conditions	,		V	• qualitative
	availability of performance aids				- quantative
	Catalogue, et performence glas	i	L	}	<u> </u>
				_	
	CRITERION BEHAVIOR				
	·		Student will define		Correct definition -
	Given the terms "proton," "neutron," and "electron"		each term in his own]	citing location of particle and its charge
	"electron"		words	ļ	particle and its charge
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LESS	SON [STATEMENT OF OBJECTIVES
					FOR STUDENTS
	GIVEN		YOU WILL		YOU MUST LEARN TO
	Inputs		Actions		• distinguish between
	 objects, people, events, 		• select, edit, or produce		examples from # input classes
	words, symbols, etc.		• type of action		on the basis of properties
	• their properties		e.g., point to, label, write, classify, etc.		• see similarity
	• examples:			4	among examples within each of the
	number new or old		RESULTING IN	4	# input classes on the basis of
	avaitability of performance aids	1	Outputs	A	# properties • associate one of
	typical/atypical conditions		 objects, events, words, symbols, etc. 	,	with each one of the # actions input classes
1					exhibit # alternative
	 problem format e.g., single input vs. multiple 		their properties (quantity/quality)		exhibit the series of
	choice		standards of acceptability		associations in the chain
		_			
	CRITERION BEHAVIOR				
	Given the terms	}	Student will define		Distinguish three types
	"proton," "neutron," and "electron"		each term in his own	ŀ	of particles and attach
1.	"electron"		words		a label to them depending on their properties of and
' -			}	· ·	location and the sign of
					their charge
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LESS	50N	OBJECTIVE	SIMULATION DECISIONS
а.	assessing simulation need	ds due to	
	LOGISTICA	L CONSIDERATIONS	INSTRUCTIONAL CONSIDERATIONS
ĺ	downtime	cost danger	sampling standardization manipulation
	N	N	N N N
b. ;	planning simulation whe	en needed No simulation	needed
١.	INPUT types	PROPERTIES: physical, psychologic	SIMULATION PLANS: visual, audio, etc.
	people		
	man made objects		
	natural objects		
	events		
	words		
	symbols		
	other		
١.	ACTION types		
	perceptual		
	motor		
	vocal	,	
	sub-vocal		
١.	OUTPUT types	, <u> </u>	
	people		
	man made objects		
	natural objects		
	events		
	words	·	
	symbols		
	other		

6.17

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FINAL EXERCISE #7 ANALYZING CRITERION BEHAVIOR

NOT TO BE PERFORMED UNTIL ALL WORKBOOK EXERCISES ASSOCIATED WITH HANDBOOK SECTION "B" HAVE BEEN COMPLETED.



FINAL EXERCISE #7: Analyzing Criterion Behavior

Before doing this exercise, you should have completed the following tasks:

(1) Read HANDBOOK Section "B": COLLECT AND ANALYZE DATA ABOUT CRITERION BEHAVIOR

and

(2) Do the WORKBOOK exercises associated with Section "B."

Your assignment in this exercise is to perform TASK B: "analyzing criterion behavior." As a basis for performing this task, you will be required to seek out an informant or to refer to a subject matter text.

Following your collection of the appropriate information, you are to perform your own analysis of the criterion behavior described on a subsequent page in this section.



YOUR ASSIGNMENT

You are to analyze a criterion behavior:

- (1) Review a description of the criterion behavior which appears on page 7.5.
- (2) Collect information about the behavior either from an informant (an English teacher) or from a text (an English grammar).
- (3) Based on the information you collect, fill in FORM A.5(4).
- (4) Prepare a statement of objectives using the FORMS provided.
- (5) (OPTIONAL) As time permits, carry out the remaining TASKS in the development process.

YOUR PRODUCTS WILL INCLUDE: *

-- completed FORM A.5(4): Analyses

--completed FORMS D.2(1) and D.2(2): Objectives

*as a minimum requirement

CONTENTS IN THIS SECTION

FORM NO.	TITLE	PAGE
	A description of the criterion behavior	7.5
A.5(4)	Analysis FORM	7.6-7.7
D.2(1)	Specification of objectives	7.8
D.2(2)	Statement of objectives for students	7.9

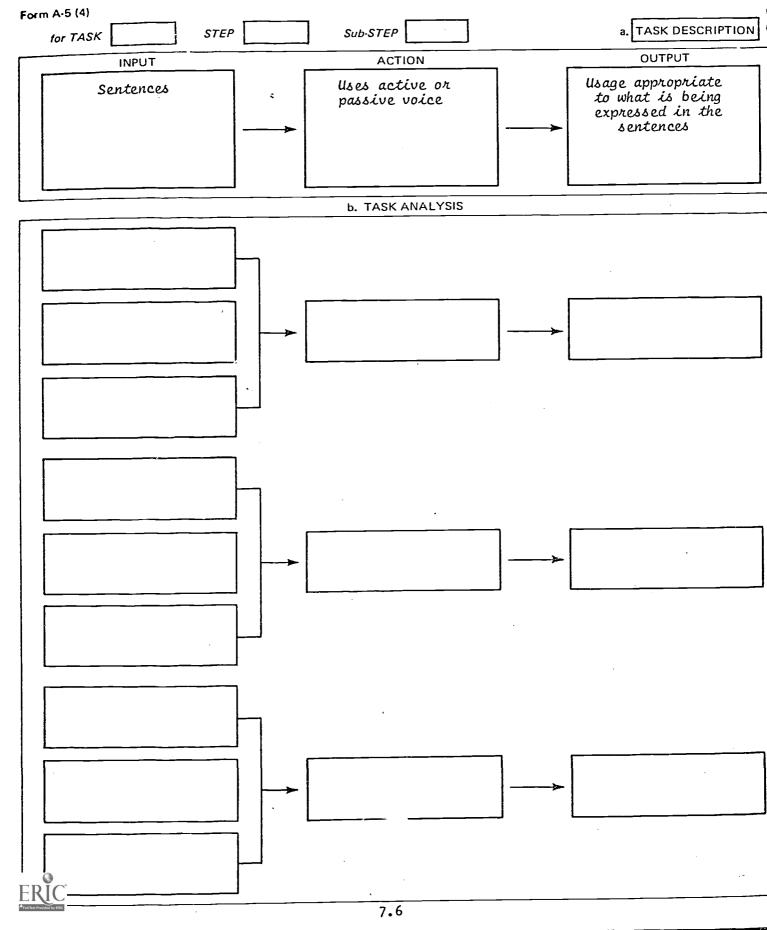


DESCRIPTION OF CRITERION BEHAVIOR

The criterion behavior you are to analyze is "using verbs in the active and passive voices in sentences."

This analysis can serve as a basis for the development of teaching students to write sentences (or paragraphs) in which they use either voice, depending on its appropriateness in a given sentence.





COMPETEN ANALYSIS	ICY.	c. LEARNING ANALYS	ıs			d. MODE ANALYSIS						
		level of difficulty in acqui	ring –									
				MINA	TIONS							
		due to	hi	med	lo			symbolic	verbal	environmental		
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			ASS	SOCIA	TIONS							
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			SCR	MINA	TIONS							
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		similarity					realistic					
		No. of properties				VISUAL						
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		dissimilarity	Г			AUDIO	realistic					
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A		No. of inputs		1	1		fabricated					
transfer	\neg	ivo. or inputs	L	1		OTHER:	Kinaesthetic,	smell, taste				

ESSON	_ <u></u>				SPECIFICATION OF OBJECTIVE
	GIVEN		STUDENT WILL		RESULTING IN
	Criterion Inputs		Criterion Actions	}	Criterion Outputs
•	mode: visual/verbal/etc.		• mode: recognition, editing, production		• mode: visual/verbal/etc.
• r	number of examples from class	A	•alternatives: new and/or old examples	A	● limits, standards
•	new and/or old examples	1	• mode: perceptual/motor/vocal/sub-vocal	1	• quantitative: amount /degree/time limits
• (ypical/atypical conditions	•		V]
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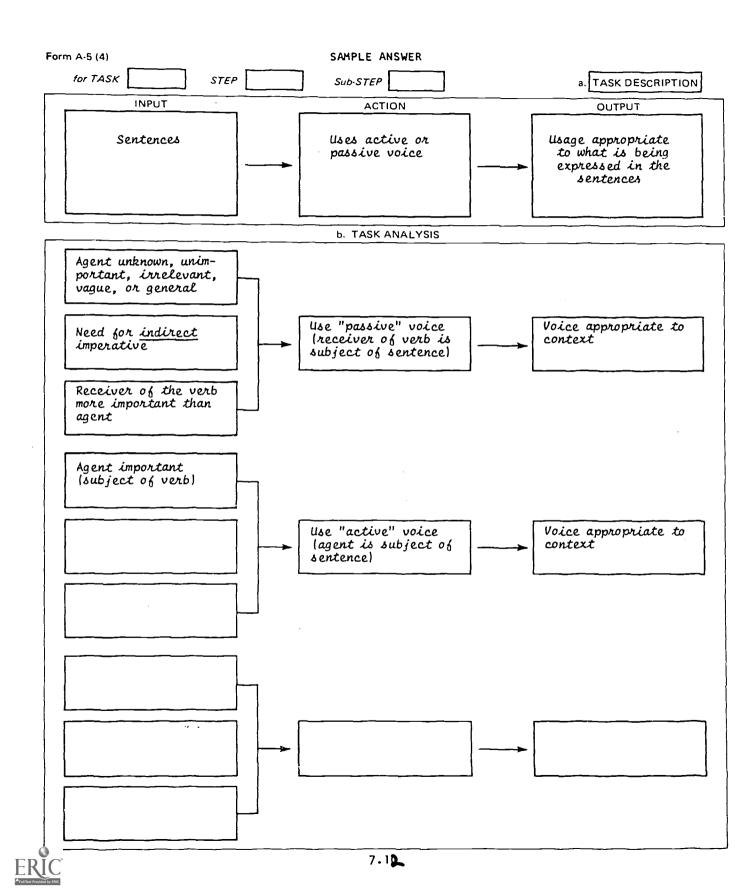
STATEMENT OF OBJECTIVES LESSON FOR STUDENTS GIVEN **YOU WILL** OT MRAST LEARN TO Inputs Actions distinguish between examples from # input classes objects, people, events, select, edit, or produce words, symbols, etc. on the basis of e type of action # properties e.g., point to, label, write, their properties see similarity classify, etc. among examples examples: within each of the # input classes **RESULTING IN** new or old on the basis of properties Outputs availability of performance aids associate one of objects, events, words, symbols, actions with each one of the etc. # input classes typical/atypical conditions exhibit alternative their properties (quantity/quality) problem format actions e.g., single input vs. multiple exhibit the series of standards of acceptability choice associations in the chain 1. 2. 3.

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UNTIL AFTER YOU HAVE COMPLETED
YOUR OWN ANALYSIS AND PREPARED
A STATEMENT OF OBJECTIVES.





COMPETENCY ANALYSIS	c. LEARNING ANALYS	SIS	d. MODE ANALYSIS						
	level of difficulty in acqui	ring —							
	DI	SCRIMINATIONS		symbolic	verbal				
	due to ▽	hi med lo		symbolic	Vi.real	environmental			
	similarity		realis	tic	X				
	No. of properties	X	VISUAL						
INPUT	No. of inputs		reproduc fabricai						
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	dissimilarity	x	AUDIO						
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transfer 🔯	No. of inputs	X	OTHER: Kinaesthi	itic, smell, taste	<u> </u>				
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	due to ▽	hi med to	perce	otual motor	vocal	sub*vocal			
	No. of association	ons X							
	associative strength of other action	ons X	recognition						
	GE	NERALIZATIONS	ļ 		 -				
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	similarity		teals	tic	X				
	No. of properties		VISUAL		-	1			
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LESSON SPECIFICATION OF OBJECTIVES **GIVEN** STUDENT WILL RESULTING IN Criterion Inputs Criterion Actions Criterion Outputs • mode: visual/verbal/etc. mode: recognition, editing, production mode: visual/verbal/etc. number of examples from class alternatives: new and/or old examples limits, standards • new and/or old examples mode: perceptual/motor/vocal/sub-vocal • quantitative: amount /degree/time limits • typical/atypical conditions qualitative availability of performance aids CRITERION BEHAVIOR Given paragraph to Will use active or Correct usage; plus write passive voice depending variation within on context (i.e., paragraph 1. relative importance of agent or receiver) SUB-CRITERION BEHAVIOR Given idea to express Will make judgments Correct judgment about about whether a relative importance of statement about the agent or receiver 2. receiver or about the agent is more important 3.



STATEMENT OF OBJECTIVES LESSON FOR STUDENTS YOU WILL **GIVEN** YOU MUST LEARN TO Actions Inputs distinguish between examples from objects, people, events. # input classes select, edit, or produce words, symbols, etc. on the basis of # properties type of action e.g., point to, label, write, heir properties see similarity classify, etc. among examples examples: within each of the # input classes number RESULTING IN new or old on the basis of properties Outputs • availability of performance aids associate one of • objects, events, words, symbols, actions with each one of the # input classes typical/atypical conditions exhibit ## alternative • their properties (quantity/quality) problem format e.g., single input vs. multiple a exhibit the series of standards of acceptability choice chain associations in the CRITERION BEHAVIOR Given paragraph to Will use active or To tell the difference write passive voice depending between contexts in on context (i.e., which the agent or receiver of a verb is relative importance of 1. agent or receiver) important; and to associate whether to use Correct usage; plus active or passive voice variation within with each of these paragraph situations SUB-CRITERION BEHAVIOR Given idea to express Will make judgments about whether a statement about the 2. receiver or about the agent is more important Correct judgment about relative importance of agent or receiver



3.

FINAL EXERCISE #8 ANALYZING CRITERION BEHAVIOR

NOT TO BE COMPLETED UNTIL ALL WORKBOOK EXERCISES ASSOCIATED WITH HANDBOOK SECTION "B" HAVE BEEN COMPLETED.



FINAL EXERCISE #8: Analyzing Criterion Behavior

Before doing this exercise, you should have completed the following tasks:

(1) Read HANDBOOK Section 'B': COLLECT AND ANALYZE DATA ABOUT CRITERION BEHAVIOR

and

(2) Do the WORKBOOK exercises associated with Section "B."

Your assignment in this exercise is to perform TASK B: "analyzing criterion behavior." As a basis for performing this task, you will be required to seek out an informant or to refer to a subject matter text.

Following your collection of the appropriate information, you are to perform your own analysis of the criterion behavior described on a subsequent in this section.



YOUR ASSIGNMENT

You are to analyze a criterion behavior:

- (1) Review a description of the criterion behavior which appears on page 8.5.
- (2) Collect information about the behavior (if necessary) from HAND-BOOK volume "G".
- (3) Based on the information you collect, fill in FORM A.5(4).
- (4) Prepare a statement of objectives using the FORMS provided.
- (5) (OPTIONAL) As time permits, carry out the remaining TASKS in the development process.

YOUR PRODUCTS WILL INCLUDE:*

--completed FORM A.5(4): Analyses

--completed FORMS D.2(1) and D.2(2): Objectives

*as a minimum requirement

CONTENTS IN THIS SECTION

FORM NO.	TITLE	PAGE
	A description of the criterion behavior	8.5
A.5(4)	Analysis FORM	8,6-8,7
D.2(1)	Specification of objectives	8.8
D.2(2)	Statement of objectives for students	8.9



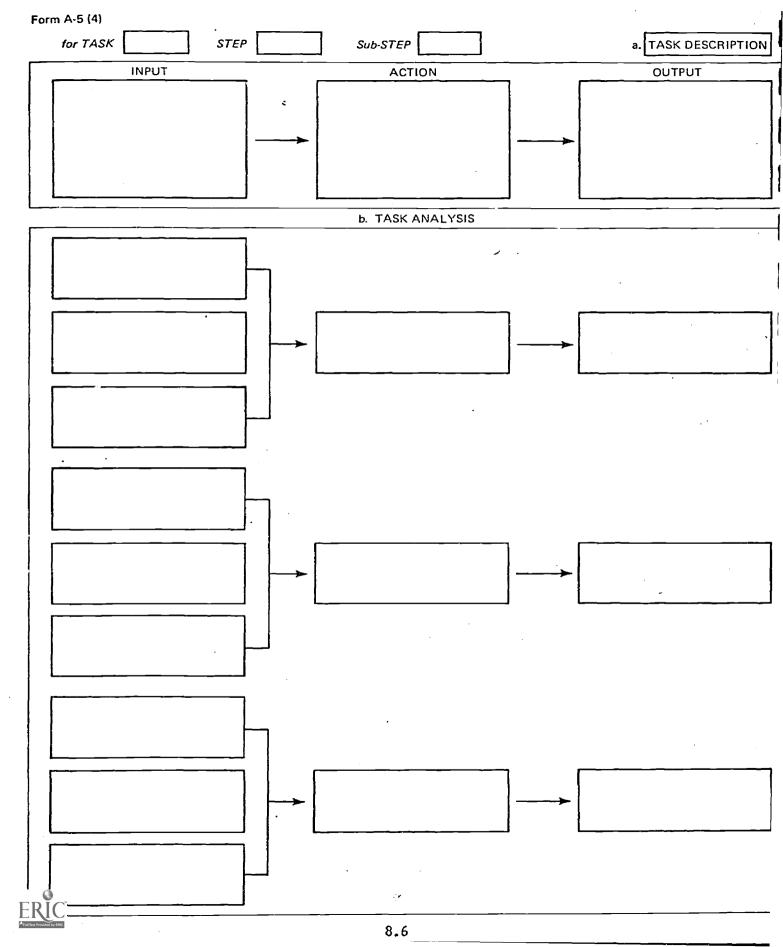
8.3 /8.4

DESCRIPTION OF CRITERION BEHAVIOR

The criterion behavior you are to analyze is "defining and illustrating RECOGNITION, EDITING, and PRODUCTION types of practice items".

This analysis can serve as a basis for the development of a program teaching students to <u>define</u> these types of practice, to <u>identify</u> examples of each type, to <u>illustrate</u> them with their own examples, and to cite <u>differences</u> between them.





COMPETE	j.					d. MODE ANALYSIS						
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	GIVEN		STUDENT WILL		RESULTING IN
	Criterion Inputs]	Criterion Actions		Criterion Outputs
1	• mode: visual/verbal/etc.	1	mode: recognition, editing, production		• mode: visual/verbaf/etc.
	• number of examples from class	N	• alternatives: new and/or old examples	A	● limits, standards
	• new and/or old examples	1	mode: perceptual/motor/vocal/sub-vocal	1	• quantitative: amount /degree/time limits
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Į	their properties		e.g., point to, label, write, classify, etc.		see similarity among examples	ı
l	• examples:				within each of the	1
l	number new or old		RESULTING IN		# input cla	sses
l			Outputs	4	on the basis of # propert	ties
l	 availability of performance aids 		 objects, events, words, symbols, 	4	associate one of # action	15
l	 typical/atypical conditions 	1	etc		# input cla	
Į]	 their properties (quantity/quality)]	exhibit # alternat	
1	 problem format e.g., single input vs. multiple 	1			exhibit the series of	
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DO NOT TURN PAGE
UNTIL AFTER YOU HAVE COMPLETED
YOUR OWN ANALYSIS AND PREPARED
A STATEMENT OF OBJECTIVES.



Form A-5 (4) for TASK STEP Sub-STEP a. TASK DESCRIPTION INPUT ACTION OUTPUT b. TASK ANALYSIS A single INPUT, ACTION. or OUTPUT presented; two or more options Identify as a "recognition" item: Correct identification: about them offered -Correct definition iairs of INPUTS, -Defines "recognition" ACTIONS, OUTPUTS; two -Correct example or more options about -Gives example -Correct comparison them offered -Compares with other tupes Any item in which a selection of answers is offered Performance identified as incorrect must be changed and made correct Identify as an "editing" item: Correct identification: Decision whether per--Correct definition formance is correct or -Defines "editing" -Correct example incorrect; if latter, -Gives example same as above -Correct comparison -Compares with other Any (required) change tupes in a performance presented as an example Correct identification: Identify as a "production" item: -Correct definition Presented with an INPUT situation, exhibits an ACTION or chain of ACTIONS associated with -Defines "production" -Correct example -Gives example -Correct comparison -Compares with other tupes

COMPETER		c. LEARNING ANALYS		d. MODE ANALYSIS								
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recall			-				reproduced/ fabricated					
transfer		No. of inputs				OTHER:	Kinaesthetic.	smell, taste	<u> </u>			



1.

2.

3.

LESSON

SPECIFICATION OF OBJECTIVES

GIVEN

Criterion Inputs

- mode: visual/verbal/etc.
- number of examples from class
- new and/or old examples
- typical/atypical conditions
- · availability of performance aids

STUDENT WILL

Criterion Actions

- mode: recognition, editing, production
- ●alternatives: new and/or old examples
- mode: perceptual/motor/vocal/sub-vocal

RESULTING IN

Criterion Outputs

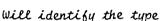
- mode: visual/verbal/etc.
- limits, standards
- quantitative: amoun* /degree/time limits

qualitative



CRITERION BEHAVIOR

Given a written example of each of three types of practice items: recognition, editing, production



Correct identification



Given the terms "recognition," "editing," and "production"

-Will define it in his own words

-Will provide an example of it

Correct definition and examples

CRITERION BEHAVIOR

Given the terms "recognition," "editing," and "production"

Will compare and contrast them (using examples)

Correct comparison and contrasts



LESSON

STATEMENT OF OBJECTIVES FOR STUDENTS

GIVEN

inputs

- objects, people, events, words, symbols, etc.
- their properties
- examples: number new or old
- availability of performance aids
- typical/atypical conditions
- problem format
 e.g., single input vs. multiple
 choice

YOU WILL

Actions

- select, edit, or produce
- type of action
 e.g., point to, label, write,
 classify, etc.

RESULTING IN

Outputs

- objects, events, words, symbols, etc.
- their properties (quantity/quality)
- standards of acceptability

MOU MUST LEARN TO

- distinguish between examples from
- on the basis of # input classes
- see similarity among examples within each of the
- on the basis of
- # input classes
 # properties
- associate one of with each one of the __
 - # input classes
 # alternative
- exhibit the series of associations in the

actions

actions

CRITERION BEHAVIOR

Given a written example of each of three types of practice items: recognition, editing, production

Will identify the type

Correct identification

You must learn to:

- -Distinguish between three types (classes) of practice items ma the basis of what the student is expected to do;
- -See similarities among variations of item types within each class; and

CRITERION · BEHAVIOR

Given the terms "recognition," "edit-ing," and "production"

-Will define it in his own words

-Will provide an example of it

Correct definition and examples

(continued)

-Associate the proper label with each type

CRITERION BEHAVIOR

Given the terms "recognition," "editing," and "production"

Will compare and contrast them (using examples)

Correct comparison and contrasts

3.

2.



FINAL EXERCISE #9

THE COMPLETE CYCLE IN THE DEVELOPMENT OF INSTRUCTIONAL MATERIALS

NOT TO BE PERFORMED UNTIL ALL
HANDBOOK SECTIONS HAVE BEEN READ,
ALL WORKBOOK EXERCISES COMPLETED,
AND ALL FINAL EXERCISES 1-8
COMPLETED.



FINAL EXERCISE #9

You are to develop a short instructional program (one which will require your target audience approximately one hour to complete).

- 1. Select a topic or behavioral area of your own choosing.
- 2. Do all the necessary analyses of the behavior to be taught. Use appropriate FORMS. For this purpose, you can reproduce copies from the blanks which appear in HANDBOOK sub-volume X.
- 3. Develop a program responsive to all your analyses.
- 4. Try out your program with at least five students. Make revisions in the program as necessary. Conduct an additional tryout cycle, using the revised version, with at least five additional students. If the results indicate it to be necessary, revise the program again.

YOUR PRODUCTS WILL INCLUDE:

- -- Task analysis
- -- Learning, competency, and mode analyses
- -- Statement of objectives
- -- Simulation plans
- -- Tests
- -- Instructional strategies
- -- An instructional program
- -- Program and test results
- -- A revised program
- -- Program and test results for the revised program
- --A program revised a second time (if necessary)



FEEDBACK

- Your empirical tryout results will provide you with appropriate feedback about the effectiveness of your program in meeting your objectives.
- 2. For those trainees who have taken this program as part of a group, critiques by each group member of the products will be useful in providing feedback about the adequacy of the analyses which preceded program development.

END OF PROGRAM

